ENGINEERING NEWS-RECORD

Idlewild: Building tomorrow's airport today p. 30

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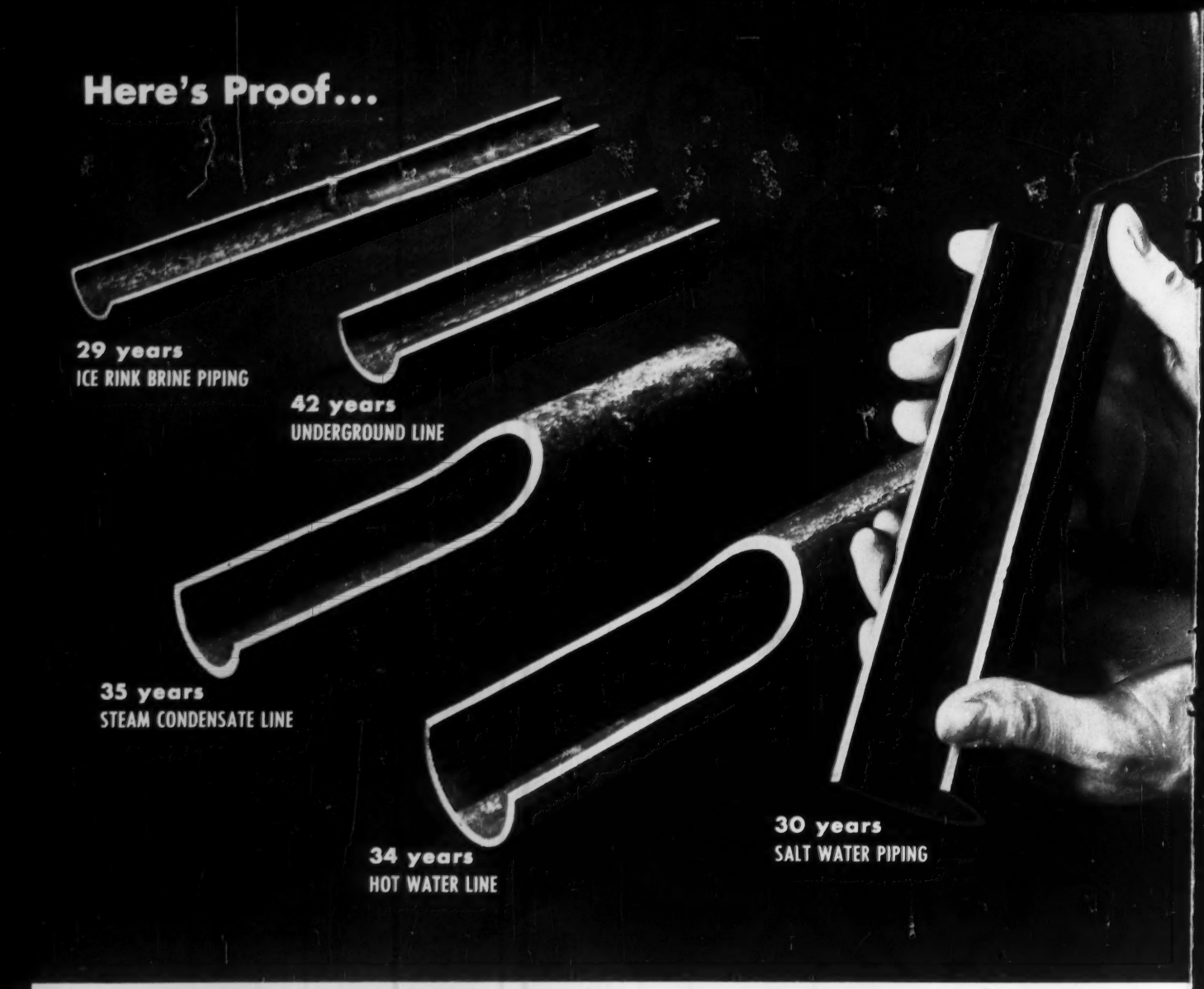

Over 250,000 fibers of glasslike iron silicate guard each cross-sectional square inch of wrought iron pipe against corrosion

Wrought Iron Pipe pays off in years of service rendered

There's a practical, dependable way to evaluate a piping material's potential in corrosive service: check its performance under actual field conditions.

The photo above shows how wrought iron pipe measures up when this service-life yardstick is applied. Here you see actual samples taken from wrought iron pipe installations in a variety of corrosive services. Some of these sections came from buildings that were being torn down. Some were cut from in-use installations by our laboratory staff.

The reasons why wrought iron pipe has lasted so long and remained in such excellent condition are found in the material's structure and composition. Tiny fibers of glasslike iron silicate are threaded throughout the body of high-purity iron. These non-rusting fibers are highly resistant to corrosive attack. When corrosion strikes, these fibers halt and detour the attack, prevent rapid pitting and penetration.

Our bulletin, *Piping for Permanence*, presents in detail wrought iron pipe's case against corrosion. Write for a copy.

A. M. Byers Company, Pittsburgh, Pa. Established 1864. Division Offices in Boston, New York, Philadelphia, Washington, Atlanta, Pittsburgh, Chicago, St. Louis, Houston, San Francisco. International Division: New York, N.Y.

Available in Canada and throughout the world

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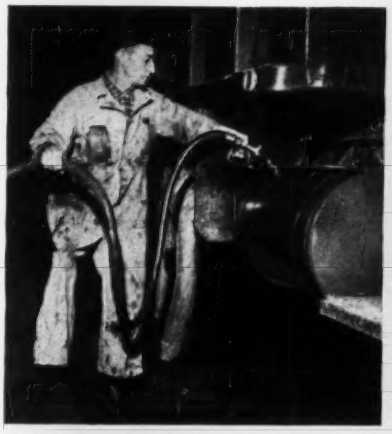

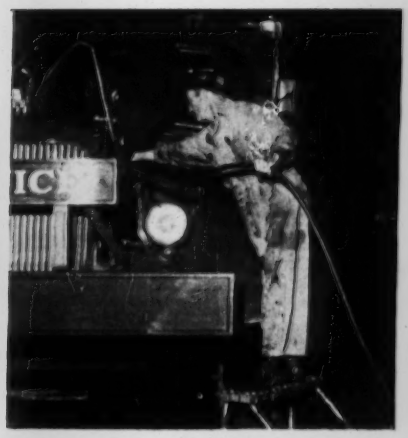

GOODYEAR INDUSTRIAL PRODUCTS

GTM-Specified

ORTAC HOSE for Universal Use

A Extra-tough cover resists weather, oil, sun, abrasion

B Vertical braids of high-tensile rayon cord for exceptional strength with great flexibility

C Tube that resists oil, gasoline, solvents, air and water

ORTAC (Oil-Resistant Tube and Cover) is available in long, continuous lengths in sizes from 3/16" to 1½ i.d.

It's really five hoses rolled into one!

You've never seen anything like ORTAC by Goodyear. With this one hose, you can feed compressed air to drills–gas up trucks and rolling stock–feed lubricants to equipment–carry water –even handle weak acids and alkalies should the need arise. In fact, it does all the jobs that used to call for five different kinds of hose–does them all easily and safely, too.

And ORTAC is recommended for the ruggedest kind of service by the G.T.M.–Goodyear Technical Man. For its tube is of CHEMIGUM, Goodyear's exclusive rubber synthetic that's exceptionally oil-resistant. It's heavily muscled to take constant dragging over rocks and rubble–everlasting stretching and straining – habitual rough handling. Yet it's amazingly flexible and easy to use.

It's easy to see, then, how a five-use hose like this eliminates any need for a large hose inventory – can substantially cut your costs on every job. For the full ORTAC story, contact your nearest Goodyear Distributor or write:

The Goodyear Tire & Rubber Company
Akron 16, Ohio

ORTAC by GOODYEAR

THE GREATEST NAME IN RUBBER

Chemigum, Ortac – T. M.'s The Goodyear Tire & Rubber Company, Akron, Ohio

IT'S SMART TO DO BUSINESS *with your Goodyear Distributor. He can give you fast, dependable service on Hose, V-Belts, Flat Belts and many other industrial rubber and nonrubber supplies. Look for him in the Yellow Pages under "Rubber Goods" or "Rubber Products."*

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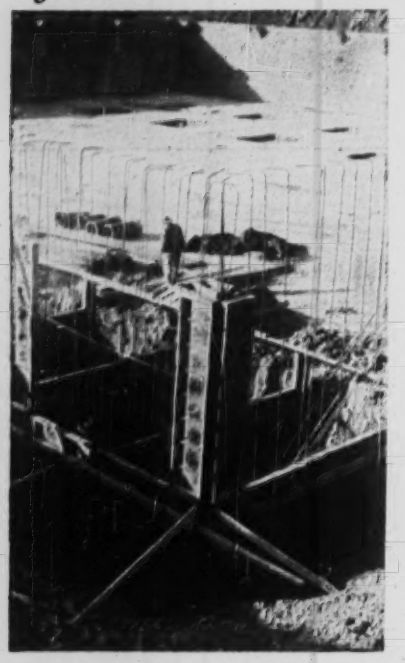

Contractor Saves 40% with Symons Forms . . .

7,500 square feet of Symons Standard Forms were used in the new 2 million gallon capacity pumping station at Melrose Park, Illinois. 2,000 cubic yards of concrete were used on the job and the concrete contractor, Louis Macro Company, Melrose Park, reported a 40 per cent saving through the use of Symons Forms. Walls for the job were completed in three pours.

Symons engineering service can help you realize substantial savings in forming. With your plans, our engineers will prepare a complete form layout, bill of materials, and make recommendations for the most efficient and cost saving method of forming.

Our field service representatives are sales engineers, ready and able to advise you on form erection, pouring and stripping methods that will help you save time, labor and materials. You can call on them to assist you on any forming problems.

Symons Forms can be rented with purchase option. Symons Clamp & Mfg. Co., 4265 Diversey Avenue, Dept. F-7, Chicago 39, Illinois.

Sam Cerniglia Company, Melrose Park, Illinois
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CRANES
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LIFTING CRANES
10 to 50 Tons Capacity

PULLSHOVELS
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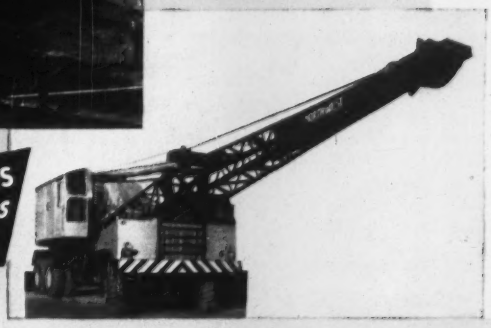
3/4 to 3 yd. Capacity



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What they do for you!

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WITH THESE NEW "Euc" REAR-DUMPS

for construction, mine, quarry and industrial work

With overhung engine type tractors and full 90° hydraulic steering, these two new Euclid Rear-Dumps have excellent maneuverability for close quarter work and accurate spotting at loading and dumping areas. Big tires provide extra traction and flotation for soft fills and difficult hauls. The low over-all loading heights and rugged construction permit easy loading with all types of equipment. Smooth bodies with 3-stage, double-acting Euclid hoists assure quick shedding of loads.

Downtime and maintenance costs are held to a minimum as a result of the easy service accessibility of all major components. Interchangeability of the semi-trailer rear dump bodies with 7 and 18-yard scraper bowls provides extra flexibility for changing job requirements.

Your Euclid Dealer has detailed information on these versatile "Eucs" as well as other Rear and Bottom-Dump models, Scrapers and Crawler Tractors ... have him show you why ***Euclids are your best investment.***

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THE

S-7

REAR-DUMP

12 tons payload ...
11 cu. yds. heaped ...
143 h.p. ...
18.00x25 tires ... top speed loaded of 26.5 mph ...
5-speed transmission ...
NoSpin differential.

AND THE

S-18

REAR-DUMP

35 tons payload ...
32 cu. yds heaped ...
300 h.p. ... 27.00 x 33 tires
Torqmatic Drive ...
NoSpin differential.

Euclid Equipment

FOR MOVING EARTH, ROCK, COAL AND ORE

This AMVIT* SEWER LINE is a life line carrying industrial wastes to safe disposal

Carborundum Metals Company
Washington, West Virginia

Engineers and Builders
The H. K. Ferguson Company

This is the last time you'll see that length of pipe going into the ditch. Yet it will serve a new industrial plant for many years.

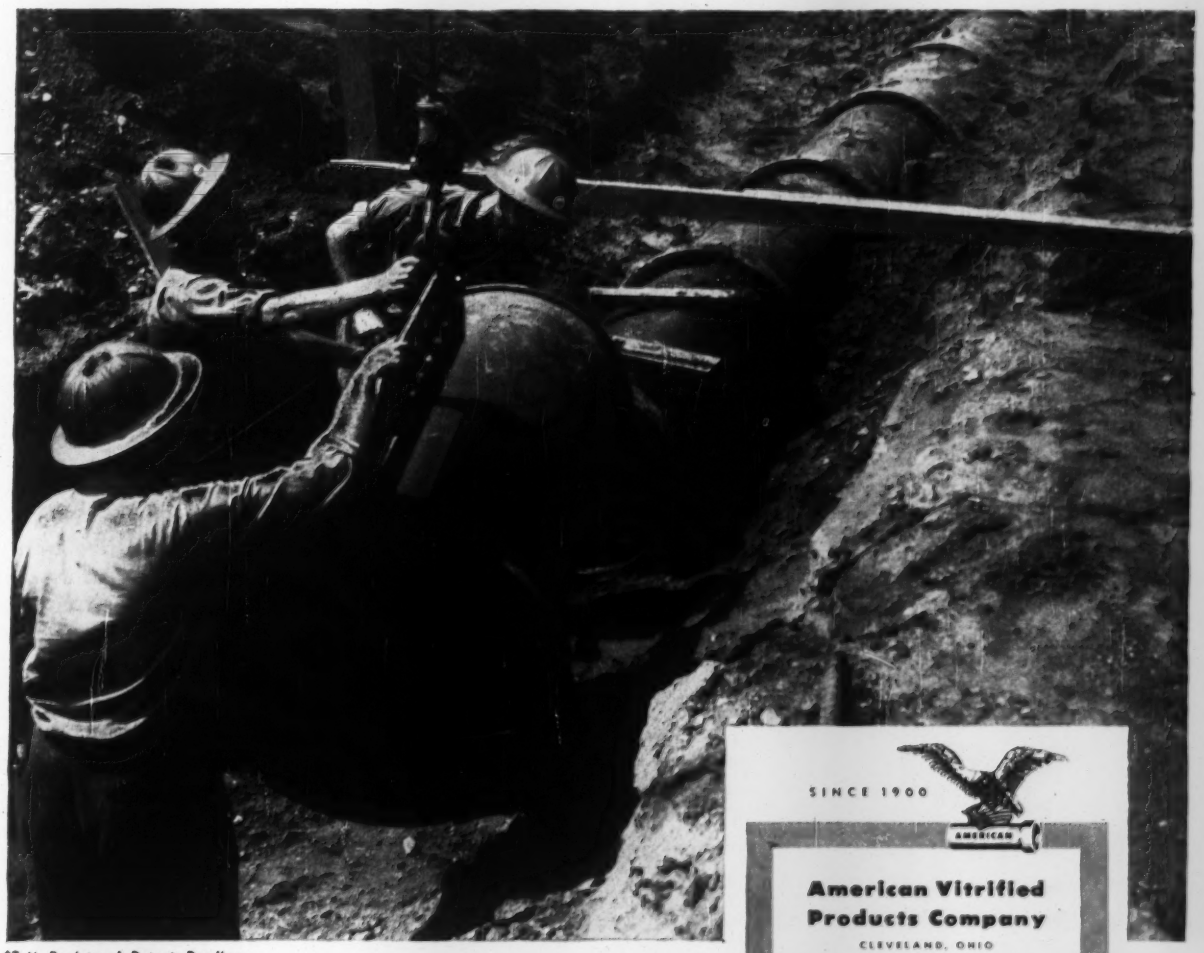
That sewer line will carry thousands of gallons of diluted acids, oils, alkali solutions and other waste material from Carborundum Metals new plant to a nearby treatment plant. Here the already diluted waste materials are made completely neutral and harmless to plant, animal and fish life. This line is one of the important life lines of that factory.

The Amvit joint was specified for this job because like the clay pipe it is unharmed by underground service.

A true mechanical joint, Amvit is made from plasticized resins of polyvinyl chloride. Thousands of feet of Amvit Jointed Clay Pipe have been installed on industrial waste disposal lines such as this.

Amvit Jointed Clay Pipe, in sizes 4" through 24", together with all fittings is available for immediate delivery in Northeast and Central States.

For more information, write or call American Vitrified Products Company, National City Bank Building, Cleveland, Ohio, or our office nearest you.



*T. M. Registered. Patents Pending.

The Amvit Joint is made of a plastic material with rubber-like characteristics. Like the pipe, the joint will withstand the most severe underground conditions. Amvit Joint is furnished on all fittings.

SINCE 1900

AMERICAN

American Vitrified Products Company

CLEVELAND, OHIO

MANUFACTURERS of: Clay pipe, flue liners, clay liner plates and concrete pipe.

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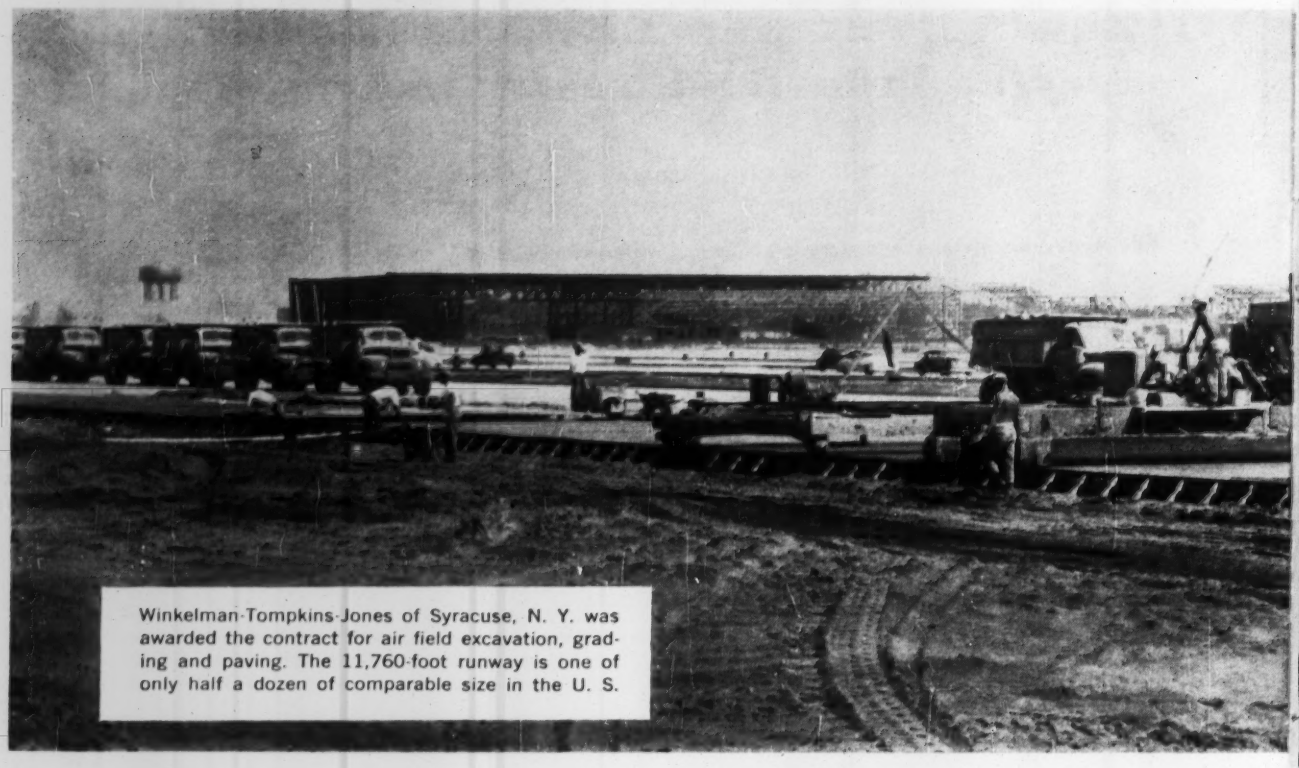


Winkelman-Tompkins-Jones of Syracuse, N. Y. was awarded the contract for air field excavation, grading and paving. The 11,760-foot runway is one of only half a dozen of comparable size in the U. S.

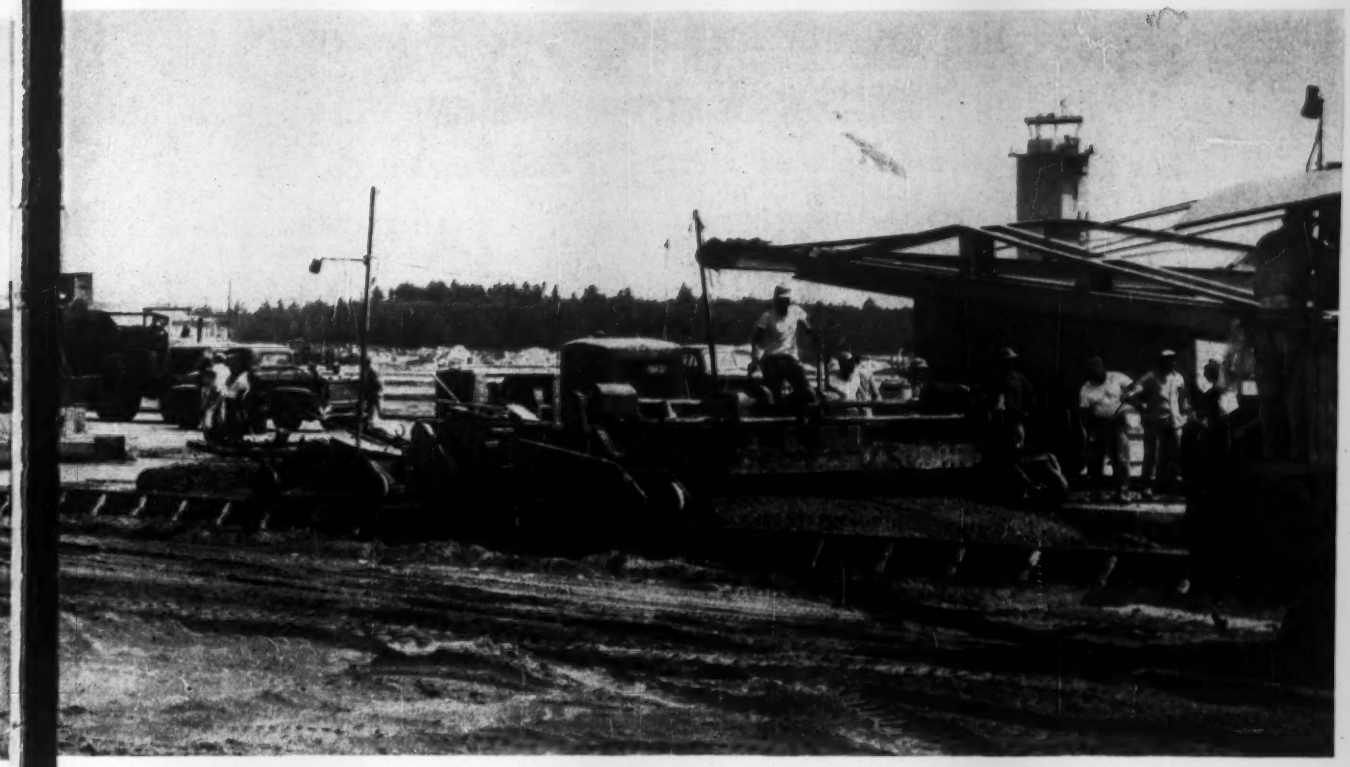
Gulf Products keep equipment rolling at

At Plattsburgh, New York, one of the most historic posts of the U. S. Army is being transformed into an air base for B-47 medium bombers. In addition to air field grading and paving, this multi-million dollar project includes construction of hangars, dormitories, mess halls, administration buildings and related facilities.

Air field grading alone has involved excavation of more than 4½ million cubic yards—and more than ½ million cubic yards of concrete will be

Parking apron extensions are being built by Bero Construction Company of Buffalo, N. Y. Bero is one of many leading contractors who use Gulf petroleum products exclusively.

THE FINEST PETROLEUM



and Fine Service Plattsburgh Air Force Base

poured in paving the runway, taxiways and parking apron. The runway will be a single concrete strip, 11,760 feet long, 300 feet wide and 14 inches thick, specially designed to take the 100,000 pound dual wheel loads of B-47's. Taxiways and parking apron will also be king-size.

Tight schedules must be maintained on this huge project—there's no time for costly mechanical delays. That's why *90%* of the petroleum products used by *all* contractors on this job are Gulf products. Gulf quality fuels and lubricants insure top engine performance, and close-at-hand distribution points provide prompt delivery.

Let Gulf serve *you* on your next job. Write today for your copy of "Gulf and Your Business" . . . and for your maintenance crew, get a copy of Gulf's revised lubrication and maintenance manual "Contractors' Guide."

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Title_____

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We get the lowest cost per foot-of-hole with TIMKEN® multi-use bits

... Reports McDowell and McDowell Construction Co.

LOCATION: Industrial plant site, Nashville, Tenn.

OPERATING CONDITIONS: Medium hard limestone.

DRILLING through medium hard limestone on a 232-acre industrial plant site, McDowell and McDowell Construction Co. found they got the lowest cost per foot-of-hole with Timken® multi-use bits.

Under many drilling conditions you, too, can get the greatest saving with Timken multi-use bits. They will give you the lowest cost per foot-of-hole when full increments of steel can be drilled in ordinary ground.

But multi-use bits may not always be your best bet.

In hard abrasive ground, for instance, Timken carbide insert bits will give you higher speeds and greater economy. And for extremely deep holes, constant-gauge holes, or small diameter blast holes, Timken carbide insert bits are again your best bet.

Your drillers will save time with Timken rock bits—multi-use or carbide insert—because they're interchangeable in the same thread series. Dozens of Timken rock bits fit the same drill steel. Change them as fast as the ground changes.

And you get these extra advantages with all Timken rock bits: 1) they're made from the Timken Company's own electric furnace fine alloy steel; 2) they have the special shoulder union developed by the Timken Company to protect threads from drilling impacts.

Find out which Timken rock bit is best for your needs. Call or write the Timken Rock Bit Engineering Service, The Timken Roller Bearing Company, Canton 6, Ohio. Cable address: "TIMROSCO".

TIMKEN

TRADE-MARK REG. U. S. PAT. OFF.

your best bet for the best bit for every job

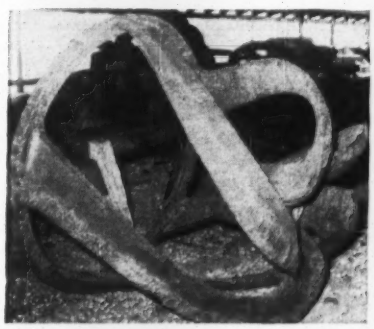
Timken threaded multi-use rock bit

Timken threaded carbide insert rock bit

HOW TO GET LONGER LIFE AND MORE WORK
from your construction equipment

For over thirty years Stoody Hard-Facing Alloys have been accepted as the standard of wear protection, increasing overall equipment life and maintaining operating efficiency. Hard-facing procedures developed by Stoody are thoroughly field tested and proven under actual working conditions in mines located all over the globe. For all-around dependability and maximum wear resistance, no better hard-surfacing materials are made. Use Stoody and you use the best!

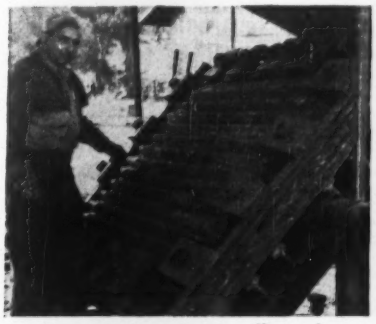
POWER SHOVEL BUCKETS are kept in top condition by applications of Stoody 21. Note use of stringer beads on all wearing surfaces.



DREDGE PARTS such as the cutter head illustrated, as well as impeller hubs and vanes can be prolonged by hard-facing wearing areas. The part above hard-faced with Stoody 21 outlasted 6 unprotected cutter heads.

CRUSHER ROLLS are easier to maintain with the new Stoody Alloy Tubular Wires applied semi-automatically. Welding is several times faster than with manual electrodes, depositing 7 to 15 pounds of metal per hour.

DIAMOND CORE DRILLING EQUIPMENT including core barrels, flutes and reamers produce more hole when protected with Acetylene Tube Borium. Footage of typical sampling drills was increased from 400-500 feet to 2000-3000 feet in one drilling operation.



CRUSHER JAWS are most efficiently rebuilt with Stoody Manganese and corrugations hard-faced with Stoody 100—both materials are available in the new Stoody Alloy Tubular Wires for semi-automatic welding.

SWING HAMMERS such as this soon lose corners and edges from severe impact and abrasion. Rebuilt with Stoody Nickel Manganese and topped off with a final pass of Stoody 21, life is increased 2 or more times.

You'll find the Stoody Guidebook chock full of ideas for prolonging life of fast wearing mining equipment by hard-facing. Ask your Stoody Dealer for a copy or write direct!

STOODY COMPANY
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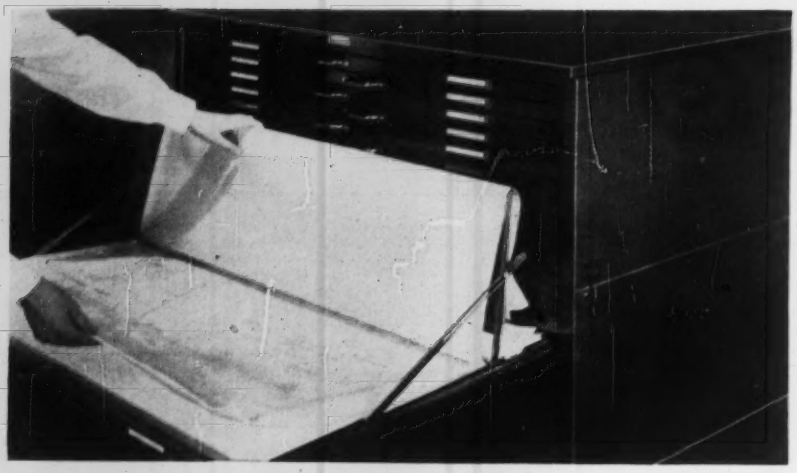
Whittier, California



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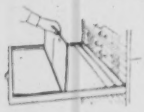
There's a patented *tracing lifter* in each file drawer. Just raise the lifter,  locate the desired drawing, and fold back all the sheets above it.

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Hamilton

DRAFTING EQUIPMENT

Reader Comment

About Winter Concreting...

SIR—I have just finished reading your article "Who's Right About Winter Concreting?" in the Mar. 7 issue of your splendid magazine.

As a geologist who has worked closely with construction engineers in bridge and highway location, it is a most interesting article indeed.

In fact, Canada to me is a most fascinating country. I spent two or three summers on Georgian Bay working on my text book on geology and after waiting a long time had the opportunity of traveling to the James Bay and Hudson Bay district to see the railroads that were surveyed and built on the ice of the muskegs.

WILLIAM CLIFFORD MORSE
Director and State Geologist
Mississippi Geological Survey

. . . Who's Right?

SIR—Your cover page, Mar. 7, with the editor's searching questions inside, relative to cold weather concrete work in Canada, can be answered by reference to ENGINEERING RECORD of July 23, 1910, pages 87-92.

In writing specifications for construction of Shoshone Dam in 1905, it was recognized that the river would claim right-of-way during four months of summer when the melted snow descends from the mountain rim of Yellowstone Park and plunges through that granite gorge—60 ft wide at bottom and 3,000 ft deep. Hence the requirement that winter work, under cover, steam heated, must be done.

The story of operations, under all the difficulties of the site, including zero weather, is told in the article cited.

Incidentally, opportunity was offered to observe the heat of hydration in a block of concrete 108 ft thick, which led my old friend, Alfred D. Flinn, to consider that factor in designing Kensico Dam; and later on developed into methods for counter-cooling and limitations in height of lifts.

During the 52 years since that time there have been many solutions of your cold weather questions, on dams and

Engineering News-Record welcomes expression of opinion from its readers. Comment should be as brief as possible and pertinent to subjects of current construction importance.

Letters should be addressed: Editor, Engineering News-Record, 330 W. 42nd St., New York 36, N. Y.

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DIETZ Visi-flash TRADE-MARK
HAZARD WARNING LIGHTS
(TRANSISTORIZED)

. . . Proved performance wins praise everywhere

"Brighter . . . tougher . . . low-cost . . . trouble free!" These are but a few of the enthusiastic quotes from contractors, municipal, county and state officials, utility and industrial users in commenting on new transistorized Dietz Visi-Flash Hazard Warning Lights.

- **The transistor circuit makes it shock-proof, uses minimum current, won't wear out . . . eliminates common maintenance problems.**
- **Optical lenses, longer dwell time, and "white" bulb make Visi-flash up to 40% brighter.**
- **First cost is 15% to 25% less than ordinary flashers.**

Go **DIETZ** *and you go Safely*

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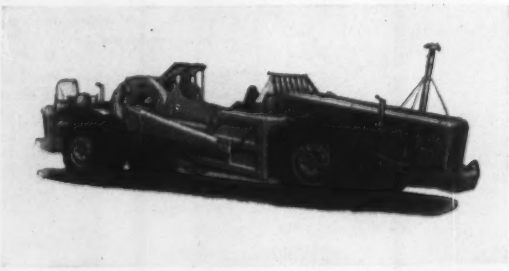

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D. W. Cole
Marietta, Ga.

Author Omitted

The article "On Site Prestressing Plant Cuts Concrete Building Cost (ENR April 18, 1957, p. 58) should have carried the name of Herman R. Rueter as author. Mr. Rueter is associated with T. V. Lin and Associates, the consultant on the pretensioned roof structure.

CALENDAR

Building Officials Conference of America, Inc., 42nd Annual Convention, The Jung Hotel, New Orleans, La., May 6-9.

American Water Works Association annual conference, Atlantic City, N. J., May 12-17.

12th Purdue Industrial Waste Conference, Purdue Memorial Union Bldg., Lafayette, Ind., May 13-15.

Construction Specifications Institute, annual convention, Sheraton-Park Hotel, Washington, D. C., May 13.

Rail Steel Bar Association, Broadmoor Hotel, Colorado Springs, Col., May 13-15.

American Institute of Architects, Centennial Celebration, Sheraton-Park Hotel, Washington, D. C., May 14-17.

Jet Age Airport Conference, ASCE Air Transport Division, Park Sheraton Hotel, New York, N. Y., May 15-17.

Society of American Military Engineers, annual meeting, Mayflower Hotel, Washington, D. C., May 20-21.

American Institute of Steel Construction, Ninth Annual Engineering Conference, Edgewater Beach Hotel, Chicago, Ill., May 27-28.

Air Pollution Control Association, golden jubilee meeting, St. Louis, Mo., June 2-6.

American Society of Civil Engineers, spring convention, Hotel Statler, Buffalo, N. Y., June 3-7.

Annual Meeting of American Society for Testing Materials, Chalfonte-Haddon Hall, Atlantic City, N. J., June 16-21.

Wire Reinforcement Institute, Inc., annual spring meeting, Greenbrier Hotel, White Sulphur Springs, W. Va., June 24-25.

Concrete Reinforcing Steel Institute, annual meeting, The Greenbrier, White Sulphur Springs, W. Va., June 24-29.

World Conference on Prestressed Concrete, Fairmont Hotel, San Francisco, Calif., July 29-August 2.

Hydraulics Conference, ASCE Hydraulics Division, Massachusetts Institute of Technology, Cambridge, Mass., Aug. 26-28.

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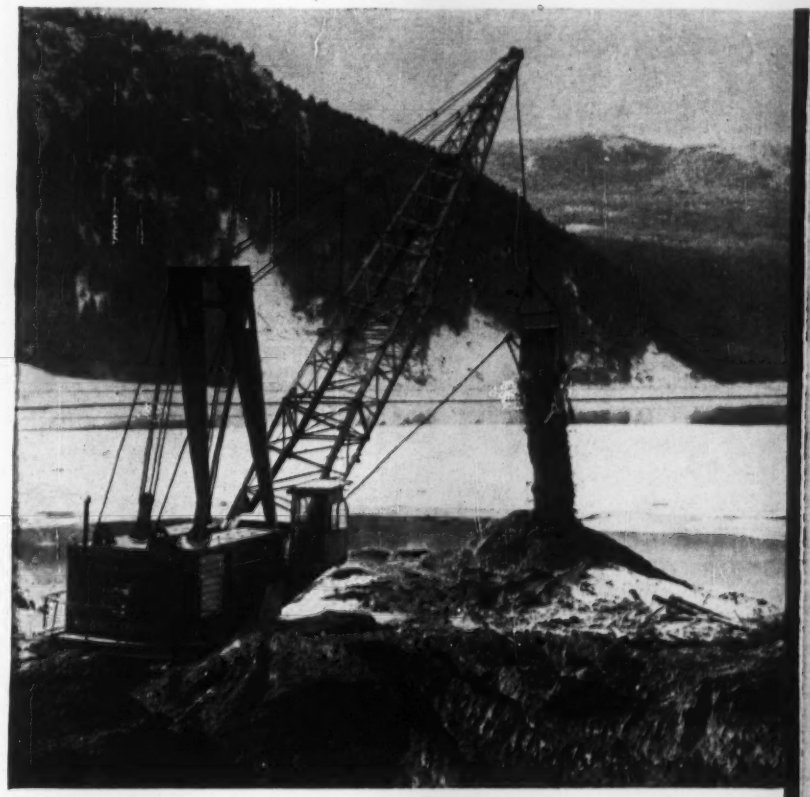

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Chicago Bridge & Iron Company
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ENGINEERING NEWS-RECORD

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Back issues of ENGINEERING NEWS-RECORD *are generally available for the previous six months. Price 50¢ each copy except Annual Cost Issue. Semi-annual indexes will be sent on request.* ENGINEERING NEWS-RECORD *is also indexed in Industrial Arts Index and Engineering Index.*

THE CONSTRUCTION WEEK

DON'T MAKE A BIG MISTAKE—In bidding on projects under the aegis of the General Services Administration, contractors may obtain swift redress of errors of less than $500 that may be discovered in their bids after contracts have been awarded. A new procedure, designed to reduce paperwork, hasten payment of contracts in which bid errors are alleged and improve relations between GSA and its contractors, was announced last week by GSA Administrator, Franklin G. Floete. Formerly, authority to make such adjustments rested solely with the General Accounting Office.

MEDIC, MOVE OVER—TV's highly rated Medic show may soon have a counterpart called Engineer. Arrangements have yet to be made, but Engineers Joint Council has been approached for its support of such a dramatic series, in a manner in which the American Medical Society lends support to Medic. Last week the EJC board expressed its general approval of the idea, and a spokesman for the big-time Hollywood producer who would create the weekly series reports he has all but closed the deal with one of the top networks. Approval of scripts and technical advice on shooting the filmed series would be cleared through EJC and probably assigned to its constituent societies most directly concerned with each script's subject matter. Among other board actions, EJC released its review of water policy (see page 25).

NIAGARA POWER BY 1960?—The end of 1960 should see power production at the planned $600 million Niagara project, predicts Robert Moses—provided, of course, Congress gives the green light during its current session. The Chairman of the Power Authority of the State of New York states that first contracts for the job could be let within 60 days after authorization by Congress, assuming financing is quickly arranged. Mr. Moses estimates that by preliminary planning under an $825,000 advance, his agency has reduced by 18 months the time Niagara power could be ready.

LOWEST BUT NOT BEST—The Common Pleas Court in Franklin County, Ohio, has cleared the way for the City of Columbus to proceed with heating, ventilating and air conditioning work on the new administration building at its Port Columbus Airport. Contract had been awarded to Limbach Co. on a bid of $343,710. Piping Contractors Co., which had bid $335,984, unsuccessfully protested—the court upheld the Airport Commission's contention that the Piping bid, while lowest, was not necessarily the best.

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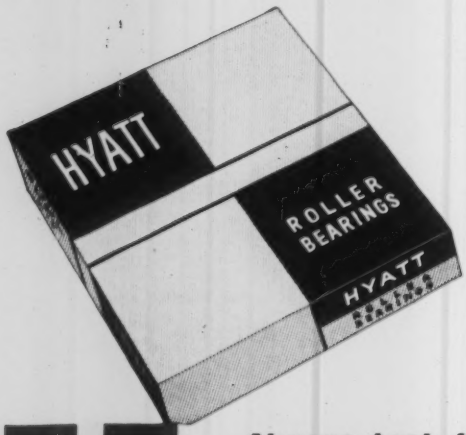

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WASHINGTON OBSERVER

- **Military projects presented to Congress**
- **New mortgage-buying schemes**
- **Belvoir reactor is the first of many**
- **Right-of-way buying stirs investigation**

● **A reduced program of military construction for next year** was presented to Congress this week. The authorization measure calls for about $1.9 billion of new projects—although it started out considerably above this. The Budget Bureau bounced the original request back to the Pentagon for downward revisions. The bundle of projects approved for the current year was $2.2 billion.

Actual spending on military construction next year may be down some $200 million from the $2.3 billion projected in the budget that President Eisenhower sent to Congress in January. This would put spending at about the same level as this year's estimate of $2 billion.

● **New schemes to put money into home mortgages keep popping up—and one stands a good chance of becoming effective.**

The Home Loan Bank Board wants to create a new pool of funds which would provide a secondary market for mortgages held by its member savings and loan associations. The idea is to use part of HLBB's $670 million of capital and surplus as the nucleus for selling debentures in the open market—all of which would then be used to buy mortgages. Theory is that these debentures can be sold to investors who are not now equipped to invest in mortgages directly—for example, pension and trust funds, small insurance companies and individuals. HLBB officials say they can move into this kind of operation without legislation, at least at the outset.

FHA officials have an idea to tap individual savings by authorizing underwriting houses to invest in FHA mortgages; debentures backed up by the mortgages would be marketed to individual investors.

● **Progress report on atomic electricity:** Chairman Lewis L. Strauss of the Atomic Energy Commission predicts a score of power producing plants by the early 1960's. He estimates there will be five in operation by the end of this year—including the package reactor that began operation this week at Fort Belvoir, Va. The Corps of Engineer project is producing electricity for a radio antenna and a printing press on the base—but is designed for portable use at out-of-the-way bases.

● **Indiana's right-of-way land buying for highways is being investigated by congressmen**—and it's likely that there will be formal hearings before Congress goes home this summer.

Sen. Gore's highway subcommittee has the inside track to air charges that excessive prices have been paid speculators. This is the kind of thing that particularly interests the committees—in view of steadily increasing highway costs and the fact that the federal taxpayer now pays for 90% of the cost of the interstate system, including money for rights-of-way as well as construction.

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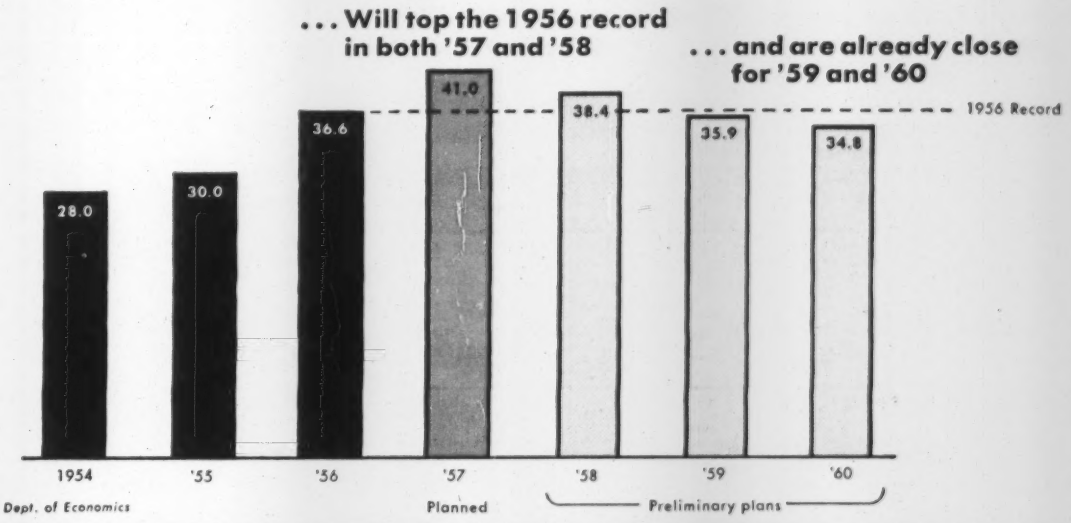
Capital Spending Plans . . .

(Billions of dollars)



Data: McGraw-Hill Dept. of Economics

Industry to Maintain Record Spending

Business plans to top its record spending on new plants and equipment in 1956 by 12% this year, and preliminary plans for 1958 are already running ahead of the 1956 figure of $36.6 billion. Even advance plans for 1959 and 1960 are within easy shooting range of last year's record total.

These figures, which point to a strong market for industrial and commercial construction through 1960, come from the tenth annual survey of Business Plans for New Plants and Equipment, just completed by the McGraw-Hill Department of Economics.

The expected capital spending total of $41 billion for 1957, up 12% from 1956, confirms the rise of 11% reported in McGraw-Hill's earlier check-up of 1957 plans last fall. It indicates that industry, on balance, has been adding to its plans for modernization and expansion, despite a tight money market and a squeeze on profits through the fall and winter.

The strength of industry's plans for 1958-60 is the most striking revelation of the new McGraw-Hill survey. The average for the three years is already almost equal to the 1956 record total for capital spending. In past years, these preliminary plans for two, three and four years ahead have always been exceeded by actual spending when the year itself arrives.

Advance plans for 1958-60 are especially strong for machinery, electrical machinery, chemical and petroleum refining firms. Outside manufacturing, heavy schedules are reported for other sectors of the petroleum industry, for electric and gas utilities and for transportation and communications. These nonmanufacturing sectors plan to spend more in each of the four years 1957-60 than they did in 1956.

Commercial firms report moderate declines in preliminary plans for 1958-60. Even 1957 spending will be only 2% ahead of the 1956 total, according to the new McGraw-Hill survey. This apparently reflects the difficulty of obtaining mortgage money commitments for commercial construction. Mining companies also project declines in 1958-60 spending.

In the manufacturing sector the largest drop in spending for both 1957 and the following three years is reported by the automobile industry. Auto, truck and parts producers plan to cut capital spending from $1,689 million in 1956 by 29% to $1,199 million this year and again to $803 million in 1958. No changes up or down have yet been decided upon for 1959 and 1960.

Here is how plans shape up in other manufacturing industries:

► **Iron and steel and nonferrous metals** are in the midst of big expansion programs. Expenditures will reach new highs this year—up 42% for iron and steel, up 66% for nonferrous—then drop off in 1958 as the present stage of expansion is completed.

► **Machinery** companies will spend 5% more this year, then plan to hold expenditures only slightly lower through 1960.

► **Electrical machinery** spending will go up 18% this year, hold about steady in 1958 and 1959, then rise to a new record of $762 million in 1960.

► **Transportation equipment** manufacturers show a 56% jump this year, with plans continuing near the same level in 1958, as shipbuilding, aircraft and railroad orders are filled.

► **Other metal working** industries expect 1957 spending to be up 5%, and plans call for spending at about the 1956 pace in the following three years.

► **Chemicals** will top all manufacturing industries in 1957 with capital spending of $1,906 million, up 31% from last year. Large tags—of $1,849 million, $1,720 million and $1,651 million—

. . . How Industry Plans Line Up

(Millions of Dollars)

INDUSTRY	1956 Actual*	1957 Planned	1956-1957 Percent Change	Preliminary Plans 1958	1959	1960
All Manufacturing	$12,787	$14,542	+14%	$12,390	$11,057	$10,601
Petroleum Industry	5,531	6,166	+11	6,421	6,276	6,081
Mining	443	474	+ 7	372	353	299
Railroads	1,231	1,366	+11	1,188	1,129	1,152
Other Transportation & Communications	4,229	4,963	+17	5,060	5,590	5,950
Electric & Gas Utilities[1]	4,895	5,991	+22	5,880	5,238	5,113
Commercial	8,236	8,401	+ 2	8,065	7,178	6,317
ALL BUSINESS[2]	$36,641	$40,979	+12%	$38,397	$35,911	$34,767

** U. S. Department of Commerce, Securities and Exchange Commission, McGraw-Hill Department of Economics.*

1. Gas Utilities based on survey by American Gas Association, for 1957-60.

2. Petroleum refining, included under both manufacturing and petroleum industry, counted only once in the total.

have already been put on the three years 1958-60.

▶ **Petroleum refining** is slated for a 30% rise to $942 million this year, with a further boost to $979 million in 1958. Preliminary plans for 1959 and 1960 already top 1956 spending.

▶ **Other process industries** show divergent trends. **Rubber** will increase spending each year through 1959. **Paper and pulp** will spend 23% more in 1957 than last year but cut spending next year and again in 1959. **Stone, clay and glass products** show an 8% drop this year and a steady decline through 1960.

▶ **Food and beverages** spending will be up 14% this year, then return to a little below the 1956 level.

▶ **Textiles** will cut spending by 14% in 1957 and drop even lower in 1958.

▶ **Construction and mining machinery** producers will spend 9% more this year than in 1956 and boost spending another 8% by 1960.

▶ **Cement** producers, who are winding up a hefty round of expansion, plan to cut capital spending by 36% this year and expect 1960 spending to be 69% below 1957.

• **Some slow-down, too**—The new McGraw-Hill survey shows some slowdown in the rate of expansion in manufacturing industries. Since 1950 manufacturing capacity has increased 42%—as of the end of 1956. It will rise 6% this year but only another 15% between 1957 and 1960.

Reports of manufacturing companies also indicate a slight shift of emphasis from expansion to replacement and modernization. Plans for 1957 call for an average of 52% of plant and equipment spending for expansion, while replacement and modernization will be the object of about 53% of the spending for the three years 1958-60.

Still planning to put well over half their capital expenditures into expansion are nonferrous metals, chemicals, electrical machinery and stone, clay and glass producers. The smallest share for expansion is reported by the textile industry—only 26% this year and 13% in 1958-60.

The reason for the slackening in expansion programs is that most companies are now operating at or below their preferred rates of operation. The operating rate for manufacturing as a whole at the end of 1956 was 86%, against a preferred operating rate of 90%. Only steel, nonferrous metals and stone, clay and glass products were operating significantly above their preferred rates.

Sales forecasts point to a rise of 26% in manufacturers' sales between 1956 and 1960. Better than average increases are expected by companies in the machinery, electrical machinery, transportation equipment, chemicals and paper industries.

By and large, the McGraw-Hill survey indicates that plans for expanding capacity will move pretty well in step with sales expectations over the coming four years.

• **Research and development up**—Sharp increases in research and development expenditures are providing a firm base for capital spending programs not only in the years covered by the McGraw-Hill survey but promise to continue even beyond 1960.

R&D expenditures rose 28% between 1955 and 1956, and they are forecast to rise another 20% this year to $7.3 billion.

The McGraw-Hill survey, which provides the only data on research plans, reports that industry's research and development expenditures will mount to over $9.2 billion by 1960.

Every industry reporting in the survey is increasing its R&D expenditures in 1957. The largest expenditures are in aircraft manufacturing. But machinery, electrical equipment, instrument, oil and chemical industries are also major spenders.

The effects of past research expenditures are already showing up in plant and equipment outlays to bring out new products.

In manufacturing as a whole, 32% of all firms expect to make such expenditures in 1957.

More scientists and engineers will be needed by industry to carry out planned research programs. Manufacturing companies report that they will need to employ 7% more scientists and engineers this year and an additional 15% by 1960 for research and development work.

How the Survey Was Conducted

The McGraw-Hill survey is based on industry's replies to a questionnaire received during March and early April. Companies that participate are usually the larger companies in their industry, but this year's survey includes a larger number of medium-sized and small companies than any previous McGraw-Hill survey. Companies reporting on the survey employ more than 50% of all workers in the group of industries where capital investment is highest.

The McGraw-Hill survey is not a **Forecast** of capital spending plans, but rather a report of actual plans at the time of the survey. However, the total figure reported has come within 4% of actual business spending in every year except 1950, when the Korean War upset plant expansion plans, and 1956, when industry's plans proved too ambitious.

In reporting last year's seam-splitting plans, the McGraw-Hill Department of Economics observed (ENR May 24, 1956, p. 102): "Capital spending plans for 1956 are so large and represent such a big boost over 1955 that they may prove physically impossible to carry out by the end of the year."

Tight money compounded the problem of material and labor shortages during the year.

The increase reported for 1957 in the new McGraw-Hill survey runs somewhat higher than the 6.5% rise anticipated in the recent survey of the U. S. Department of Commerce and the Securities and Exchange Commission. The principal reason is that the government survey includes a sample of small commercial firms, whose plans show a sharp decline for 1957. A large part of the capital expenditures of these firms, however, goes for automobiles, trucks and store furnishings rather than buildings and heavy equipment.

How Did They Do It?

Merritt-Chapman & Scott gets Glen Canyon Dam

The 19 contractors in two joint ventures that bid against Merritt-Chapman & Scott Corp. for Glen Canyon Dam probably had not yet recovered from the bid opening (ENR Apr. 18, p. 25) when the U.S. Bureau of Reclamation announced its award this Monday: It's MC&S at a record smashing $107,955,522, some $10 million under the second bid and $28 million under the bureau's estimate.

How can this relative newcomer to big dam construction—which only a year ago broke then-existing records for dollar size of construction contracts by taking $91 million Priest Rapids Dam on which it is beating construction schedule on the Columbia River—now take on the seven year task of building 700 ft Glen Canyon Dam?

That was the question voiced by many a surprised construction man and certainly uppermost in minds of the contractors who had lost out in the bidding on this key unit in the Upper Colorado River project. But there was no evidence of surprise in the executive offices of MC&S as ENR sought to answer the question of how they did it.

William Denny, executive vice-president who heads the construction department in this one-time heavy construction outfit, now a diversified corporate giant, simplifies his answer to how an eastern firm can take a prized project from western competitors:

"They're going to build it anyway," says big, handsome Bill Denny. What he means is that the field management on the job under MC&S will be largely the same breed of western dambuilders who might have tackled the job for the Guy F. Atkinson or Morris-Knudsen joint ventures had they bid low. (Just who will manage the project for Merritt-Chapman has not been announced.)

Mr. Denny contends that manning the vast project and equipping it have not been the great problems in the bidding. Financing is the key to it all, he suggests.

• **Financing tough?**—But then ENR quizzed Merritt-Chapman's executive vice-president for finance, 36-year-old Marshall G. Staub, who makes the financing of this mammoth job sound simple, too.

To hear him tell it, the construction department under Bill Denny just told him what men and materials it would need, then he and Senior Executive vice-president R. E. Harvey got together with Louis Wolfson, president and board chairman, to figure the financing.

Three liberal provisions offered by USBR make Glen Canyon's financing a bit easier, says Mr. Staub: There is a mobilization advance; payment will be made for materials as they are delivered to the site; and twice-monthly estimates will be used for more frequent payment to the contractor in early stages of the project.

At one stretch in the course of the job (which MC&S hopes to do in closer to six than seven years) Mr. Straub admits finances will be a problem. Two years from now the contractor's cash investment in the job will be sizable (he won't say just how mich) but normal bank financing will be arranged for this period, which could last for two years.

MC&S apparently had no problem in securing its performance bond. Specs called for a relatively small bond—only $7 million for performance and a $5 million payment bond.

• **Merritt-Chapman's experience**—When Mr. Denny reviews a list of past and current dam construction projects, he reveals only Priest Rapids as purely an MC&S job of major proportion. On $39 million Folsom Dam, dedicated last year in California, as on Gorge High Dam under construction for Seattle, MC&S began in joint venture with Savin Construction, which it has since acquired.

MC&S considers neither of these two "big" dams (the Gorge High contract was a "mere" $14.7 million) as ideal jobs. Changes at Folsom caused the project to grow from $29 million to $40 million in cost while under construction, yet it was completed on schedule despite this plus two untimely cofferdam floodings. Gorge High is well behind schedule as an ice-barrier specified and designed by the city's engineers has failed so far to stop underground leakage (ENR Apr. 18, p. 21).

And while its Canadian Division (C. A. Pitts, Ltd.) is at work quarrying aggregate for the St. Lawrence power dam, MC&S took a beating there when turned down although low bidder on both halves of this international dam (ENR July 7, 1955, p. 96).

But big construction is not new to this builder of Mackinac Bridge foundations and Baltimore's vehicular tunnel. Boss Denny speaks casually of the eight 4 yd or six 6 yd mixers he may use at Glen Canyon. It's a straight-forward job, he says, just big. First dirt will be turned within a month to start the 2,500 day contract.

IN DALLAS, subdivisions on the outskirts of city received brunt of damage.

Flooding in East Texas Can Get Worse

Sudden heavy rains caused flash flooding of four major rivers in east Texas last week which by this Monday had turned into general flooding of at least one of the rivers, the Trinity.

Additional rains, which are a possibility, could turn the situation into a major disaster, but as of Monday man-made reservoirs and floodways had kept damage low.

The four streams are the Trinity, Brazos, Colorado (in Texas) and Guadalupe which all flow southeasterly to the Gulf of Mexico. Four reservoirs and two floodways completed in the past few years in the Fort Worth-Dallas area held flood damage in the Trinity watershed to $7 million, instead of $72 million without the flood control, according to Corps of Engineers estimates. And most of this damage occurred from flooding of local drainage channels and small tributaries on the outskirts of Dallas and Fort Worth. At Dallas floodgates, last week's flow was projected to 141,000 cfs, second only to the 184,000 cfs recorded in 1908.

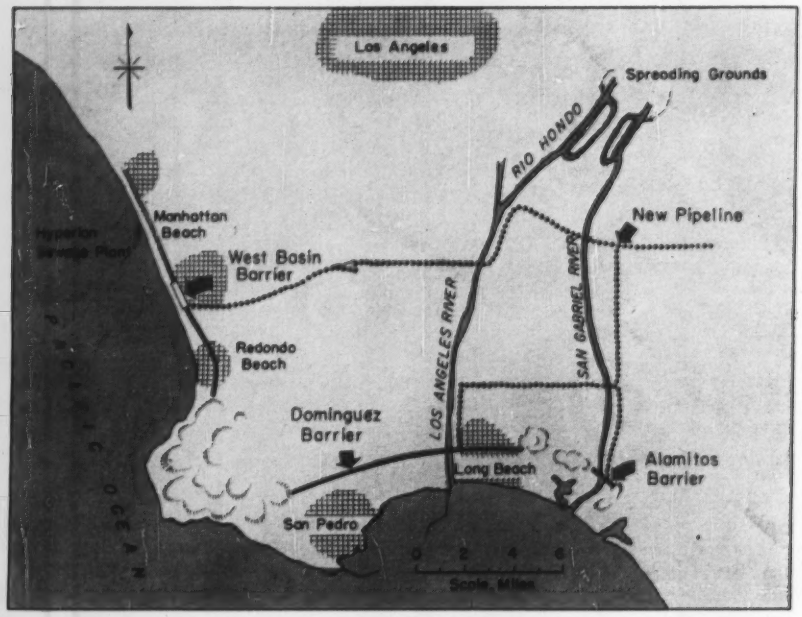
Two federal reservoirs on the Brazos held damage in that basin to an estimated $9 million, instead of $22 million. A series of locally sponsored reservoirs on the Colorado River are credited with confining damage there to agricultural land.

Texans could find one bit of good news in the floods—they signaled the end of the drought. The land though, parched for seven years, would require several months of heavy rains to become saturated.

Many Texas contractors were caught with their pencils dull—what with the drought they forgot it could rain and thereby delay construction schedules.

Salt Water Barriers . . .

. . . consisting of recharge wells would protect L.A. area ground water quality. West Basin Barrier would be extended from present one mile length to 11 mi. Pipeline would import untreated Colorado River water for barriers as well as for spreading-ground use.



L. A. Looks Further Into Well Recharge

An $850,000, 3½ year study that may lead to a complex groundwater replenishment system is getting under way in Los Angeles County. The studies are aimed at providing the necessary technical data for design of three salt water barriers in coastal areas plus a pipeline to import Colorado River water to Rio Hondo and San Gabriel River spreading grounds.

The money has been appropriated by the Los Angeles Board of Supervisors and the studies will be conducted by the Los Angeles County Flood Control District. If feasibility of the barriers and groundwater recharge systems is determined, voters in the affected areas will be asked to approve formation of a groundwater replenishment district that will provide by taxation the necessary funds for construction and operation of the systems. Preliminary estimates put the construction cost in the neighborhood of $9 million.

The Los Angeles County Flood Control District has successfully operated a segment of a well recharge barrier to sea water intrusion in the vicinity of Manhattan Beach. A $750,000 appropriation by the state legislature for field tests made this barrier possible. The legislation was sponsored by the West Basin Water Association, a voluntary group representing the principal industries, cities and water companies in the area. Operation of this segment is financed by a tax on property overlying the benefited ground water basin. The barrier, together with recent voluntary curtailment of pumping has been effective in stemming the drop in groundwater levels. But the barrier in operation is only a mile long. To protect effectively the entire West Basin area, an 11 mi. barrier is needed.

Barriers are also needed in the Dominguez and Alamitos gap areas near the southern coast of Los Angeles County. The studies under way will encompass an exploratory program to gather data on the aquifers and gradients of the aquifers. They will determine where right-of-way for well recharge system is practical. They will also include tests to determnie spacing of the necessary wells. And other methods of recharging will be considered.

• **Use treated sewage?**—Another phase of the program will be further investigation of the feasibility of using effluent from the Hyperion treatment plant for operation of the west barrier. Indications are that this can be done provided tertiary treatment of the effluent is accomplished. Effluent subjected to secondary treatment at Hyperion may be delivered to the wells for about $10 an acre-ft. Untreated Colorado River water might cost about $16 an acre-ft. That would leave $6 an acre-ft to provide the necessary additional treatment.

Even secondary treatment leaves substantial suspended solids and biochemical oxygen demand. Tests have shown that this material would plug the recharge wells in relatively short order. Present thinking is that tertiary treatment would involve passing the effluent through relatively large natural sand filter beds or through rapid sand filters.

The study program would also determine best type of recharge wells to be used. A typical well now in operation includes a 12 in. perforated casing surrounded by a 6 in. gravel envelope.

Water involved may total for the West Basin barrier 75 to 100 cfs or 50 to 75,000 acre-ft a year. The Dominguez barrier might run 30 to 40 cfs and the Alamitos barrier might run 10 to 15 cfs. In addition, Colorado River water at rates varying from 25,000 to 150,000 acre-ft a year would be introduced into ground water at Flood Control District spreading grounds on the Rio Hondo and San Gabriel Rivers.

Washington State Bridge Financial Study Authorized

A new financial-feasibility study of a proposed second floating bridge across Lake Washington, east of Seattle, Wash., was authorized April 23 by the Washington Toll Bridge Authority. The investigation will be made by the New York firm of Coverdale and Colpitts, consulting engineers.

The first phase of the study will concern the proposed Evergreen Point-Union Bay site, several miles north of the existing bridge. Should the route be found to be feasible, the study will end there. If not, the engineers will study the possibility of a bridge immediately adjacent to the existing structure, each to carry traffic one way.

Cost of the project is estimated at $25 million.

Two New Water Policy Statements Issued

Engineers Joint Council and American Water Works Association review earlier stands on national policy

This week, a nation still without a national water policy had two more policy statements of qualified organizations on which to draw.

"Principles of a Sound Water Resources Policy" as newly prepared by an American Water Works Association committee was printed and mailed to AWWA's 11,000 members. And at its board meeting in New York on last Tuesday the Engineers Joint Council approved its "Principles of a Sound National Water Policy"—produced over the past 18 months by an EJC Review Board, distinct from the 75 man National Water Policy Panel that published an EJC report bearing the same name in 1951.

The two new statements, AWWA's and EJC's, add to an impressive number of reports and statements on the unresolved question of just what the nation's water policy is. They began, in recent times, with the hefty, three volume report of the President's (Pres. Truman's) Water Resources Policy Commission in 1950. EJC's statement of that year came as sort of a rebuttal to the Presidential commission's report.

Then came the First Hoover Commission on Reorganization of the Executive Branch, with its concern about the multiplicity of existing federal interests in water resources; the Commission on Intergovernmental Relations; the Materials Policy Commission; the Second Hoover Commission; the Presidential (Eisenhower) Advisory Committee.

Prior to all these, AWWA had said its piece on water policy way back in 1948. But with all that had transpired since, both AWWA and EJC in 1955 decided it was time for an update.

• **EJC says**—The Engineers Joint Council's statement concerns itself relatively heavily with what the role of the federal government should be in water resource development. It says that "participation of state, interstate, local, and private agencies in this development should be actively encouraged and expanded, with the federal government assuming responsibility within its constitutional power and when its participation is necessary to serve the national interest."

The statement, further along, echoes the frequently proposed idea of a top-level board of review in the federal government for study of water development plans. It specifies that this board be not less than five members, chosen on a basis of ability and experience in the water field. A report of the proposed board should accompany each project report to Congress.

EJC's reviewers of water policy devote themselves at length in their report to the economic justification of projects and the reimbursement of costs by beneficiaries ("both direct and indirect"). "No federal project should be constructed until the identifiable beneficiaries have arranged to contribute an equitable portion of its cost." Further, "Revolving funds for construction should be eliminated."

In its conclusions, the EJC statement calls for: maximum utilization of water resources; development at the lowest governmental level practical; reimbursement of equitable shares of federal expenditures by beneficiaries; clear, forthright project reports; coordinated basin wide planning; conformity to the same basic policies by all federal agencies in water development; and the expert review board to pass on all federal projects.

• **AWWA says**—The waterworks association's statement, presented concisely in 11 points, is understandably a statement stressing the prime importance of public water supplies. It goes to the AWWA board for final approval this month of the organization's convention in Atlantic City.

Point 1: Sound water policy means adequate supply of water; prevention of waste; reduction of pollution; provision of most effective distribution of water; and control of floods.

Point 2: "First priority should be given to providing water for people—for use in their homes and urban activities. The relative status of industry, agriculture, recreation, and navigation depends upon the contribution which each can make to the economic and social welfare."

AWWA calls for a position of Federal Coordinator of Water Resources "to provide Presidential direction and agency coordination . . . for planning and development of water resources projects in which there is a federal interest." Its report further calls for a board of review independent of other federal agencies to analyze engineering and economic feasibility of projects to determine the federal interest in them and to report to the President and Congress.

AWWA proposes regional or river basin committees under non-voting chairmen appointed by the President and membership from federal, state and local agencies involved. And at the federal level, a permanent inter-agency committee is suggested.

Federal responsibilities and activities, in AWWA's view, should provide for unified development of interstate river systems; supply plans for projects found desirable by Congress for meeting current necessities in the national interest; restrict federal contributions to amounts warranted by national interests involved; distribute costs among beneficiaries; and encourage state and local water resource development.

State rights and responsibilities in the field should be exercised fully, says AWWA. Its committee report calls for state laws to ease water management, faster construction.

EJC's Review Board was under chairmanship of Richard D. Hoak and included M. J. Dowd, R. G. Folsom, L. R. Howson, H. E. Hudson, Jr., P. J. Raver, Philip Sporn, Abel Wolman and R. K. Linsley. The AWA committee is composed of Abel Wolman as chairman, A. P. Black, E. S. Chase, L. H. Enslow, G. E. Furgeson, S. B. Morris, J. H. Murdoch, Jr., N. T. Veatch, W. V. Weir and J. W. Cramer.

Road Bids Rise

Contractors raise prices on federal-aid highways

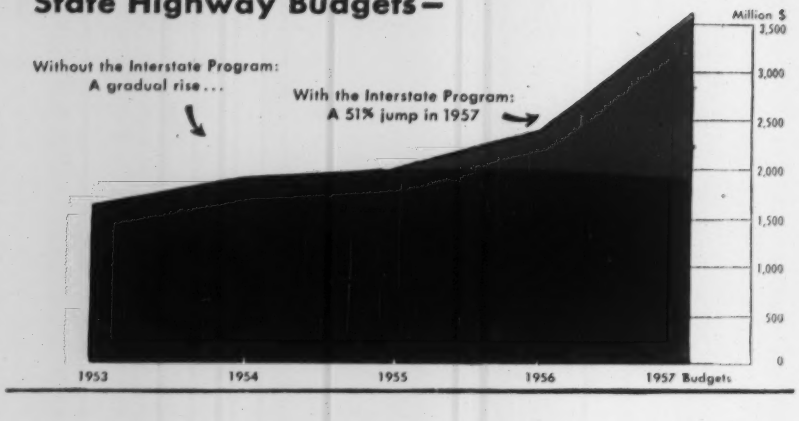
Contractors increased their bid prices on new federal-aid highway projects let in the first quarter of 1957 by an average 1.4% over fourth quarter of 1956.

The first quarter 1957 index hit a new all-time high of 169.7 based on average bid prices in the 1925-29 period as 100. While this was 7.7% higher than in the first quarter of 1956, the index actually has risen only a little since the new interstate highway program was launched last July. During this nine month period, the composite mile index increased only 1.5%.

Rugged competition apparently has kept contractors' bid prices from rising rapidly, even though increases in steel and cement prices have pushed contractors' costs higher during the nine month period.

Effects of higher cement, steel and labor costs on bid prices are apparent from a check of BPR's first quarter sub-indexes for these bid items: concrete pavement, up 0.5%; reinforcing steel, up 3.7%; structural concrete, up 3.5% and common excavation, up 1.5%.

State Highway Budgets—



STATE HIGHWAY PROGRAMS 1956–1957 (excluding toll roads)

Reported by State Highway Departments to ENR, in thousands of dollars

STATE AND REGION	TOTAL CONTRACTS Scheduled 1957	TOTAL CONTRACTS Let 1956	TOTAL CONTRACTS Percent Change	INTERSTATE CONTRACTS Scheduled 1957	INTERSTATE CONTRACTS Let 1956	INTERSTATE CONTRACTS Percent Change	TOTAL CONTRACTS AND MAINTENANCE 1957	TOTAL CONTRACTS AND MAINTENANCE 1956	TOTAL CONTRACTS AND MAINTENANCE Percent Change
Maine	$20,000	$14,845	+35	$5,000	$3,696	+35	$32,500	$26,633	+22
New Hampshire	25,000	7,500	+233	16,000	850	+1,782	32,000	13,612	+135
Vermont	11,000	8,850	+24	6,500	0		16,120	13,565	+19
Massachusetts	108,700	82,500	+32	44,750	13,400	+234	113,020a	86,125a	+31
Rhode Island	19,000	10,000	+90	13,000	3,000	+333	21,900	12,735	+72
Connecticut	69,000	30,000	+130	21,000	3,000	+700	79,800	40,570	+97
NEW ENGLAND	**252,700**	**153,695**	**+64**	**109,250**	**23,946**	**+356**	**295,340**	**193,540**	**+53**
New York	300,000b	241,805c	+24	135,000b	53,280c	+158	336,802b	279,651c	+20
New Jersey	n.a.	21,886d		n.a.	130d		n.a.	21,886d	
Pennsylvania	225,420	100,031	+125	109,166	23,958	+355	265,720	138,920	+91
Maryland	73,000	60,385	+21	18,800	13,300	+41	80,104	66,575	+20
District of Columbia	13,744	3,188	+331	9,514	0		15,819	5,051	+213
Delaware	15,000	13,500	+11				18,692	16,559	+13
MIDDLE ATLANTIC	**627,164**	**418,988**	**+50**	**272,414**	**90,537**	**+201**	**717,137**	**508,756**	**+42**
Virginia	63,118	32,305	+95	28,785	5,625	+412	91,218	58,405	+56
West Virginia	39,201	17,218	+128	23,027			63,601	45,772	+39
North Carolina	g	45,240d		g	2,029d		n.a.	45,240d	
South Carolina	48,970	27,800	+76	18,900	2,900	+552	61,970	39,800	+56
Georgia	70,000	36,788	+90	20,000	3,119	+541	80,500	47,380	+70
Florida	125,000	73,233	+71	40,000	1,433	+2,691	141,500	86,997	+63
Alabama	63,000	51,047	+23	33,000	2,000	+1,550	71,000	63,171	+12
Mississippi	60,100	18,312	+228	33,200	1,411	+2,253	66,800	24,312	+175
Louisiana	95,000	65,000	+46	50,000	0		112,500	80,000	+41
Kentucky	40,000	28,500	+40	20,000			61,500	47,669	+29
Tennessee	50,000	54,000	−7	31,000	1,888	+1,542	59,400	62,500	−5
SOUTHERN	**654,389**	**404,203**	**+62**	**297,912**	**18,376**	**+1,521**	**809,989**	**552,881**	**+47**
Ohio	254,000	162,500	+56	161,700	37,850	+327	290,100	198,222	+46
Indiana	55,000	27,515	+100	25,000	200	+12,400	70,175	40,635	+73
Illinois	193,400	86,923	+122	122,700	13,936	+780	217,700	108,373	+101
Wisconsin	69,970	53,720	+30	23,380	1,131	+1,967	83,470	65,620	+27
Michigan	169,000	113,400	+49	67,000	41,000	+63	191,000	134,400	+42
MIDDLE WEST	**741,370**	**444,057**	**+67**	**399,780**	**94,117**	**+325**	**852,445**	**547,250**	**+56**
Minnesota	50,000	56,000	−11	15,000	8,326	+80	54,000	60,000	−10
Iowa	94,200	47,400	+99	50,000	4,440	+1,026	104,940	57,346	+83
Missouri	98,478	66,709	+48	51,163	8,188	+525	120,778	88,017	+37
Arkansas	h	30,236		n.a.	3,888		n.a.	39,427	
North Dakota	35,000	21,000	+67	18,000	1,700	+959	39,300	24,737	+59
South Dakota	45,000	26,470	+70	15,000	2,864	+424	52,900	33,822	+56
Nebraska	29,500	19,830	+49	11,500	0		38,850	28,468	+36
Kansas	65,000	45,018	+44	20,000	5,596	+257	78,750	57,771	+36
Oklahoma	64,000	38,500	+66	26,000	14,500	+79	74,718	51,576	+45
Texas	275,000	225,000	+22	140,000	33,000	+324	310,600	258,600	+20
Montana	34,000	25,000	+36	4,000	1,200	+233	41,385	31,915	+30
Wyoming	31,834	19,450	+64	19,078	3,959	+382	35,334	22,749	+55
Colorado	56,000	35,000	+60	25,000	8,000	+213	66,000	43,500	+52
New Mexico	45,500	29,525	+54	25,500	8,855	+188	52,000	36,450	+43
WEST OF THE MISSISSIPPI	**923,512**	**654,902**	**+41**	**420,241**	**100,628**	**+318**	**1,069,555**	**794,951**	**+35**
Idaho	20,000	12,572	+59	10,000	3,726	+168	24,800	16,372	+51
Utah	33,390i	10,043d	+232	29,960i	609d	+4,820	37,755	13,958	+170
Arizona	31,000	22,483	+38	20,000	2,707	+639	35,000	25,605	+37
Nevada	20,000	12,000	+67	9,000	1,500	+500	23,200	14,760	+57
Washington	60,000	45,000	+33	35,000	14,000	+150	70,500	55,500	+27
Oregon	41,000	25,500	+61	24,000	6,700	+258	53,500	38,149	+40
California	225,700	207,800	+9	91,445	47,300	+93	251,400	232,800	+8
FAR WEST	**431,090**	**335,398**	**+29**	**219,405**	**76,542**	**+187**	**496,161**	**397,144**	**+25**
UNITED STATES	**$3,630,225**	**$2,411,253**	**+51**	**$1,719,002**	**$404,146**	**+325**	**$4,240,627**	**$2,992,522**	**+42**

Note: All regional and national totals and percent changes based on only those states supplying both 1957 and 1958 data.
a Excludes routine maintenance work. b April '57–Mar. '58. c April '56–Mar. '57. d Bureau of Public Roads.
e Fiscal year. f Includes some contract work. g Highway commission being reorganized. h Arkansas General Assembly belatedly approved $164.5 million of funds for highway department, whereupon department programed $9.3 million of work and awarded $3.7 million of contracts. (ENR Apr 11,p26) i July '57–June '58 j July '56–June '57. n.a. Not available

ENR survey shows that tollroad

Budgets for

Fired by the twin burners of increasing highway congestion and the availability of federal funds, state highway departments throughout the country have built up a full head of steam to tackle their road problems.

Response to an ENR survey indicates that in 45 states and the Dist. of Col. $4.5 billion in contracts will be awarded for 1957 highway construction and maintenance. This represents a 30% increase over the 1956 total . . . for highway construction . . . even though it reflects a 50% drop in tollroad work.

Exclusive of tollroad construction, figures reveal that state highway departments have budgeted $3.6 billion for construction (see table at left) and $610 million for maintenance (see table at right) in 1957. This is a 51% boost in construction contracts and a 5% increase in maintenance expenditures over those of 1956.

Furthermore, the results show that while 25 states will raise their 1957 contract awards by more than 50%, several states intend to more than double their lettings this year.

Credit for the increase in highway work can be given almost entirely to the interstate program.

More than $1.7 billion—just under half the total of state contract budgets will go for interstate work.

When compared with the $404 million spent on interstate projects during the last six months of 1956, the $1.7 billion figure indicates that the states are overcoming inertia, and getting their individual programs under way.

Most encouraging feature of the interstate programs is the general adherence to schedules claimed by most states. Of the 45 states reporting, only 13 say they are behind their anticipated programs and three of these expect to be on schedule in the near future.

As had been anticipated, land acquisition problems, shortage of engineers and inadequate steel supplies have been a fairly consistent source of trouble. But in spite of this, progress reported, appears to be good.

While six of the 13 states behind schedule blame the engineer shortage, 13 other states with the same problem say it is not causing them any delay. And while acquisition of right-of-way is obstructing the program of five states, eight others with the same problem are maintaining their schedules.

In the plains states and in the southwest, where not too many years ago wars were fought over the fencing of land, limited access is posing a problem.

construction is down 50%, but . . .

State Highways Up 51% This Year

Arizona, for instance, reports that one of its principal difficulties stems from its inability to convince its taxpayers of the need and desirability of controlled access.

To lick the shortage of engineers, many of the states are depending on the services of consultants. Two of the states, Tennessee and Kansas, report that a major portion of their highway work will be designed by consultants.

For the most part, the materials supply outlook is good. No cement shortages were reported and only six states complained of a shortage of steel.

Only three states report any difficulty in obtaining federal authorization for projects.

Preliminary planning by the states, however, is causing some delays but the departments concerned feel that the added time spent now in planning will speed up progress later. Kentucky, for instance, has completed plans to spend 57% of its 1957 highway money in designing its roadbuilding and in acquiring its rights-of-way. Thus, while Kentucky is one of the six states which has not yet awarded any contracts under the interstate highway program, its officials are confident that the state will be ahead for having spent this time and money now rather than later.

Montana is another state whose emphasis on preliminary engineering and right-of-way considerations for projects to be scheduled over a five year period will result in a light construction schedule for 1957.

Two states, Ohio and Nebraska, are having difficulty raising matching funds, and Oklahoma reduced its maintenance and equipment budgets in order to increase its share of construction money.

The legal requirements for public hearings have met with mixed reactions. Ohio claims that its road program has been hampered by this section of the Highway Act while Pennsylvania which has held more than 45 public hearings, contends that they have been of great value.

In addition to the increase in the dollar value of the contracts awarded for actual work on highway projects there is also to be considered an increase in equipment purchases by the states.

A total of $55 million has been budgeted by state highway departments for the purpose of buying new construction and maintenance machinery during 1957. This is a 5% increase over the amount spent last year.

All in all, it's obvious from an analysis of the facts collected by ENR that the work proposed by state highway departments and progress being made on that work will make 1957 a busy year for any one concerned with highway construction—particularly since the work to be done on freeways is just part of the picture.

Tollroad work, though dying, is not yet dead. Toll authorities in 1957 will add more than $200 million to highway contracts. While this is just a little more than half of the almost $400 million in tollroad contracts awarded in 1956, it will represent a large chunk of highway work in New York and Illinois particularly.

The New York State Thruway Authority is budgeting $101 million in contracts this year. This is not too far below the $122.3 million in contracts awarded in 1956.

The Illinois State Toll Highway Commission plans to award $100 million worth of contracts this year—a 300% increase over 1956.

In the few other states where tollroad work is still under way, contracts will be much smaller in 1957 than they have been in previous years.

STATE MAINTENANCE AND EQUIPMENT PROGRAMS

Reported by State Highway Departments to ENR, in thousands of dollars

STATE AND REGION	MAINTENANCE By Own Forces 1957	1956	Percent Change	By Contracts 1957	1956	Percent Change	NEW EQUIPMENT PURCHASES 1957	1956	Percent Change
Maine	$12,500	$11,788	+6	0	0	...	$220	$650	−66
New Hampshire	7,000	6,112	+15	...	...	...	300	250	+20
Vermont	5,000	4,595	+9	120	120	0	150	150	0
Massachusetts	2,985a	2,740a	+9	1,335	1,185	+13	1,334	996	+34
Rhode Island	2,900	2,735	+6	...	...	...	110	90	+22
Connecticut	10,400	10,160	+2	400	410	−2	1,200	1,300	−8
NEW ENGLAND	**40,785**	**38,130**	**+7**	**1,855**	**1,715**	**+8**	**3,314**	**3,436**	**−4**
New York	36,702b	37,733c	−3	100b	24c	+317	2,500b	1,748c	+43
New Jersey	n.a.	n.a.	...	n.a.	n.a.	...	n.a.	n.a.	...
Pennsylvania	40,000	38,700	+3	300	189	+59	3,900	3,737	+4
Maryland	7,104	6,190	+15	...	...	...	941e	479e	+96
District of Columbia	1,204	1,104	+9	871	759	+15	230	140	+64
Delaware	3,692f	3,059f	+21	n.a.	n.a.	...	400	310	+29
MIDDLE ATLANTIC	**88,702**	**86,786**	**+2**	**1,271**	**972**	**+31**	**7,971**	**6,414**	**+24**
Virginia	23,600	22,100	+7	4,500	4,000	+13	1,500	1,085	+38
West Virginia	24,400	25,429	−4	n.a.	3,125e	...	1,500	1,620	−7
North Carolina	n.a.	n.a.	n.a.	n.a.	n.a.	...	n.a.	n.a.	...
South Carolina	10,000	9,300	+8	3,000	2,700	+11	500	500	0
Georgia	10,500	10,502	−1	0	0	...	1,000	960	+4
Florida	12,500	10,500	+19	4,000	3,264	+23	850	750	+13
Alabama	8,000	12,124	−34	...	...	...	2,000	3,992	−50
Mississippi	6,700	6,000	+12	0	0	...	995	845	+18
Louisiana	17,500	15,000	+17	0	0	...	2,000	1,500	+33
Kentucky	18,500e	15,724e	+18	3,000e	3,445e	−13	2,500	2,500	0
Tennessee	9,400	8,500	+11	0	0	...	850	1,000	−15
SOUTHERN	**141,100**	**135,269**	**+4**	**14,500**	**13,409**	**+8**	**13,695**	**14,752**	**−7**
Ohio	27,000	26,140	+6	8,500	9,582	−11	1,600	1,513	+6
Indiana	15,000	13,000	+15	175	120	+46	1,500	1,250	+20
Illinois	21,800	18,237	+20	2,500	3,214	−22	2,500	1,511	+65
Wisconsin	13,000	11,300	+15	500	600	−17	0	0	...
Michigan	22,000	21,000	+5	...	...	...	1,262	850	+48
MIDDLE WEST	**99,400**	**89,677**	**+11**	**11,675**	**13,516**	**−14**	**6,862**	**5,124**	**+34**
Minnesota	1,000	1,000	0	3,000	3,000	0	1,000	1,092	−8
Iowa	9,462	8,782	+8	1,278	1,164	+10	1,586	1,381	+14
Missouri	22,300	21,308	+5	...	...	...	2,500	2,252	+11
Arkansas	n.a.	9,191	...	n.a.	...	...	n.a.	1,146	...
North Dakota	4,000	3,269	+22	300	468	−36	250	218	+15
South Dakota	7,310	6,940	+5	590	412	+43	600	627	−36
Nebraska	8,500	7,850	+8	850	788	+8	650	603	+8
Kansas	11,150	10,264	+9	2,600	2,489	+4	950	1,072	−11
Oklahoma	10,218	12,247	−17	500	829	−40	750	1,016	−26
Texas	35,600	33,600	+6	0	0	...	4,000	3,841	+4
Montana	6,957e	6,615e	+5	428e	300e	+43	500	592	−16
Wyoming	3,500	3,299	+6	0	0	...	300	338	−11
Colorado	9,000	8,000	+12	1,000	500	+100	950	800	+19
New Mexico	6,350	6,580	−3	150	345	−57	500	381	+31
WEST OF THE MISSISSIPPI	**135,347**	**129,754**	**+4**	**10,696**	**10,295**	**+4**	**14,330**	**14,218**	**+1**
Idaho	3,000	2,200	+36	1,800	1,600	+13	700	560	+25
Utah	4,365i	3,915j	+11	...	...	...	1,000g	935j	+8
Arizona	4,006e	3,122e	+28	...	...	...	615e	500e	+23
Nevada	3,200e	2,760e	+16	...	...	...	500	706	−29
Washington	9,500	9,500	0	1,000	1,000	0	1,500	1,500	0
Oregon	11,000	11,108	−1	1,500	1,541	−3	1,200	980	+22
California	25,700	25,000	+3	...	...	...	3,000	3,000	0
FAR WEST	**60,771**	**57,605**	**+5**	**4,300**	**4,141**	**+4**	**8,515**	**8,171**	**+4**
UNITED STATES	**$566,105**	**$537,221**	**+5**	**$44,297**	**$44,048**	**+1**	**$54,687**	**$52,115**	**+5**

Note: All regional and national totals and percent changes based on only those states supplying both 1957 and 1958 data. a Excludes routine maintenance work. b April '57–Mar. '58. c April '56–Mar. '57. d Bureau of Public Roads. e Fiscal year. f Includes some contract work. g Highway commission being reorganized. h Arkansas General Assembly belatedly approved $164.5 million of funds for highway department, whereupon the department programed $9.3 million of work and awarded $3.7 million of contracts. (ENR Apr.11,p.26) i July '57–June '58. j July '56–June '57. n.a. Not available.

West Delaware Bids

Contractor on job low-bids 20 mile remainder of 44 mile water tunnel

West Delaware Tunnel Constructors last week came in with a total low bid of $43,904,554—$249,396 lower than the next best—for the remaining 20 miles of the 44 mi long West Delaware water tunnel.

The joint venture now stands to sew up all but 5 miles of the 11.4 ft dia, concrete-lined bore, which will tap the West Branch of the Delaware River for New York City's Board of Water Supply. WDTC already holds contracts for, and is well along on, the first 19 miles of the tunnel, awarded to it in the fall of 1955 on a low bid of $37.2 million—$6 million lower than the next low. (MacLean-Grove Co. and Brewster & Son, Inc., hold the contract for the middle 5 miles of the tunnel.)

West Delaware Tunnel Constructors, Roscoe, N. Y., bid for last week's two contracts as a joint venture of Johnson, Drake & Piper, Tecon, Winston Bros., and Conduit & Foundation Corp. On its first West Delaware Tunnel contracts, WDTC also includes Grafe-Callahan Construction Co.

• **Two close contenders**—WDTC in last week's bidding was one of five bidders for Contract 454 and one of four on No. 455. But both times it nudged out the same contractor—a combination of Frazier-Davis, Massman, MacDonald and S. J. Groves.

On Contract 454 for 12 miles of tunnel, WDTC's low of $26,241,750 was $108,425 better than the loser's $26,250,175. The Frazier-Davis combine's bid of $17,803,775 for the 8 miles of Contract 455 lost out when an 8% reduction—to be applied if both contracts are awarded to the same contractor—was introduced in WDTC's bid of $19,198,700. This brought the joint venture down to $17,622,804—$140,971 lower than F-D's estimate.

Other bids on Contract 454 were for $29.5, $32.4 and $33.9 million; for the 455 contract, $21.4 and $22.6 million.

Power, Navigation Issue Gets Washington Hearing

The issue was joined last week in the dispute between the Upper and Lower Missouri River Basins over allocation of river water.

It came when the Missouri River Division of the Mississippi Valley Association called for witnesses to defend the present setup of water distribution before a Senate committee hearing at Washington May 1 and 2. Upriver states want more of river's water for power generation but the downriver states hold this would deprive them of water used in the summer to maintain navigation depths in the river.

Both the South Dakota and Montana legislatures asked Congress to investigate what South Dakota rural electrification interests (REA's) have described as a "criminal waste" of water by Army Engineers.

The Mississippi Valley Association to date has held that a controversy would jeopardize Congressional funds to complete the Missouri Basin project.

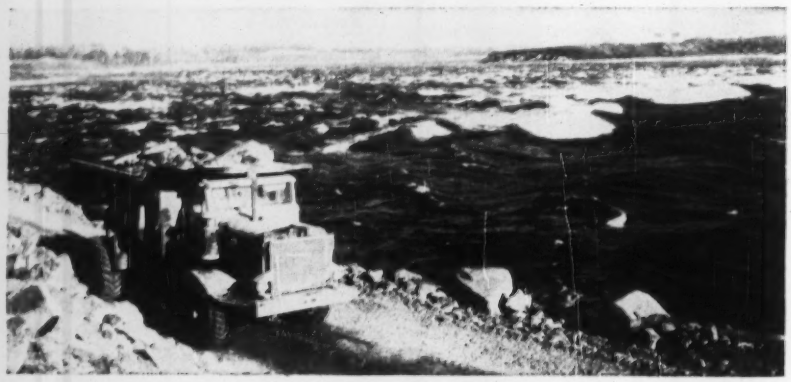
Bids Due June 18 on Huge Federal Building

One of the biggest public-building contracts ever awarded will be at stake June 18 when the General Services Administration opens bids on construction of the State Department Office Building in Washington. Construction cost of the 7 story structure is estimated at nearly $50 million out of a total project cost of $57.4 million.

Officially an extension and remodeling of the existing State Department Building, the project will occupy a four-square-block site incorporating the present building and will more than quadruple the existing floor space. With 2.7 million sq ft of floor area, it will be exceeded in size by only one other federal office building, the Pentagon.

On and after May 7, bidding material will be available in Room 1304, GSA Building, 19th & F Streets, N.W., Washington 25.

Architects for the project are Graham, Anderson, Probst & White, Inc., of Chicago, and Harley, Ellington & Day, Inc., of Detroit. The Washington firm of A. R. Clas is associated as local liaison. The GSA Public Buildings Service will supervise construction of the project.

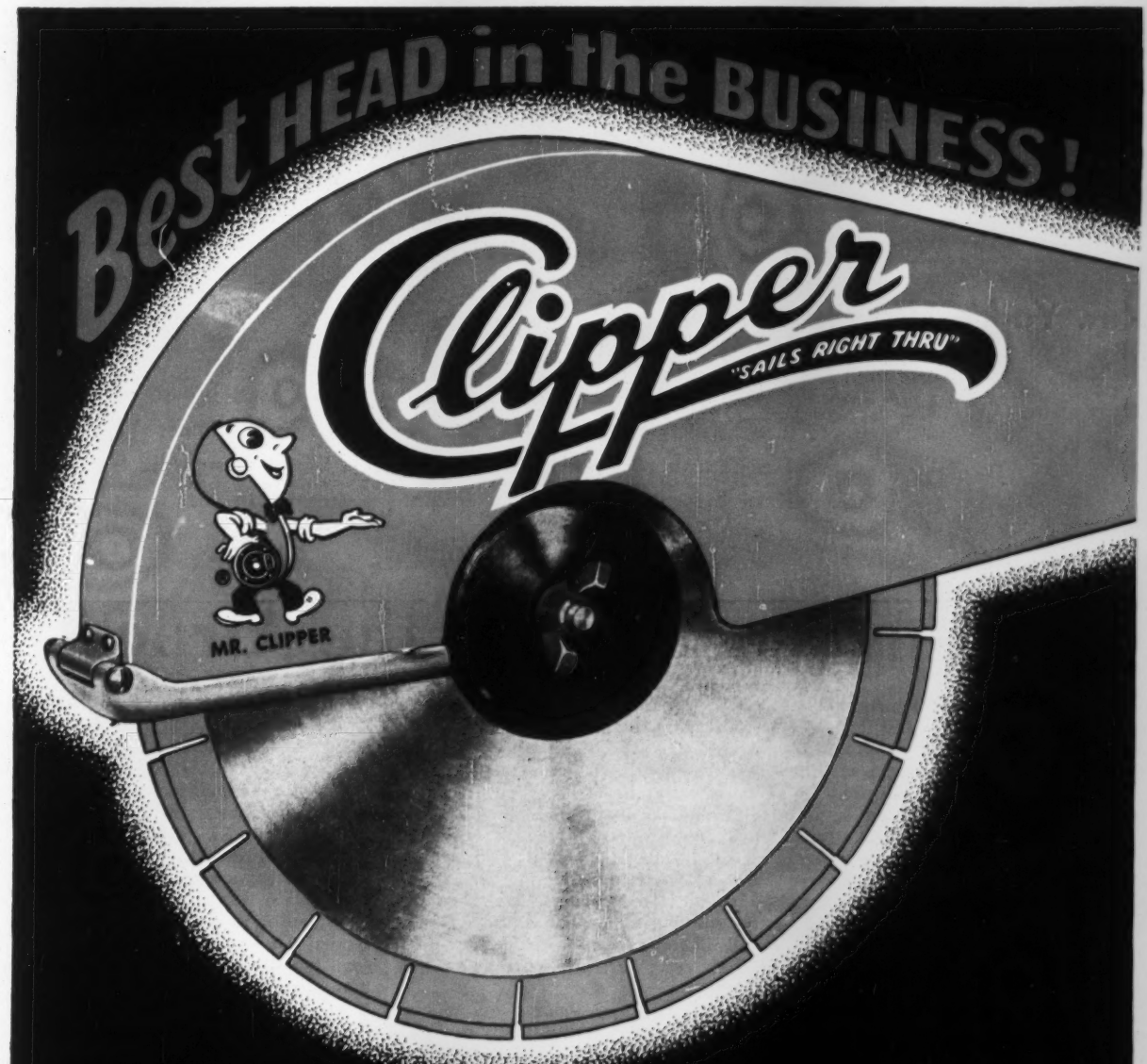


Raging rapids on the St. Lawrence . . .

. . . Are completely tamed by cofferdam

Long Sault on the International Rapids near Cornwall, Ont., is no more. As reported last week, the cable-placed cofferdam across the head of the rapids is now finished and being tightened up against leakage, which had been a problem for some time.

This is cofferdam "E," key to the entire diversion scheme which now has the entire river flowing controlled through the Long Sault Dam.



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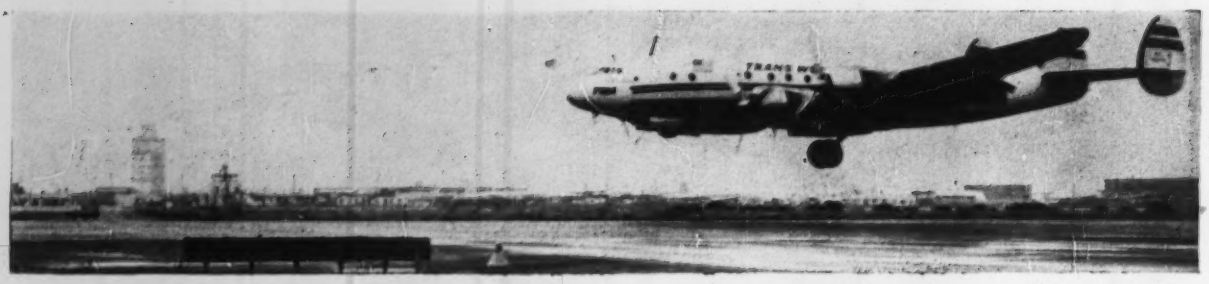


New York's Idlewild Airport . . .

A beehive of activity and still growing. Regularly used by 30 scheduled airlines, it is averaging over 374,000 passengers and almost 11 million pounds of air cargo per month. With prospects of doubling this figure by 1965, Port of New York Authority engineers drew plans for a logical development (right) and have started . . .

Building Today—For the Airport of

New York International Airport at Idlewild, in the short span of eight years has become the air cross-roads of the world. This great airport, the major western terminus of many important North Atlantic routes is now used regularly by 30 scheduled airlines, carrying some 374,000 passengers and almost 11,000,000 lb of air cargo in an average month. Its employees total more than 14,900 with an annual payroll of about $84,000,000.

At an eventual cost of $120 million, the Port of New York Authority has started to construct a 655 acre "Terminal City" at Idlewild, in the center of the 5,000 acre airfield. It will include an International Arrival Building with two adjacent airline wing buildings and individual airline terminal buildings capable of handling 140 domestically owned aircraft simultaneously.

The largest of these buildings will be the 11-block-long International Arrival Building with its wings, which will service the flights of foreign flag airlines.

The unit terminal buildings in the area will be constructed by the major U.S. airline companies for their own use. The area will contain 176 acres of aircraft apron, 7½ miles of taxiways, 10 miles of two lane roads and four parking lots with a total land area of 50 acres and a combined capacity for 6,000 cars.

In addition to the "Terminal City" and major hangars, the Port Authority has started construction for a 320 room International Hotel which will be located near the entrance to the airport. (ENR, Feb. 21 p. 50).

• **City started job**—Construction originally began in 1942, when the City of New York contracted for placing of hydraulic fill over the marshy tidelands at the head of Jamaica Bay, located in the southeast corner of the city, about 15 miles from midtown Manhattan.

Some 70 million cubic yards of sand and fill from the bay was finally placed on the area by large hydraulic suction dredges.

The city spent about $58.5 million on the site for basic fill, utilities, the runway system and a small cinder block administration building. (Now part of the temporary terminal building). But because of city financial difficulties, progress had almost halted in 1947 when the Port Authority agreed to continue the construction and development with its own funds, paying the city a yearly rent based on the income after payment of operating and financing expenses. Since leasing the airport, the authority has spent about $105 million and committed an additional $30 million.

New York City had built six runways. When the field was officially opened in 1948, PNYA activated four of these runways, closed two, and built the necessary connecting taxiways. A new instrument runway was added later costing more than $2.2 million.

In 1952, an 11 story, million dollar control tower—the tallest in the world—was completed. The authority also constructed the three largest triple-hinged steel arch hangars in the world, each 300 ft by 218 ft at a cost of $9 million. (ENR March 1, 1956, p. 42.) A $3 million hangar for National Airlines was dedicated in 1953 and in 1954, a $3.7 million hangar and related facilities were completed for Lockheed Service International.

In 1955, three more giant hangars were built, a $5 million facility for United Air Lines, a $5 million facility for Eastern Air Lines, and a $1.5 million combined hangar and communications center for the Civil Aeronautics Administration. Other hangars were started for American Airlines, Pan American World Airways and Trans World Airlines.

• **Ground traffic problems**—In planning the new terminal facilities, however, PNYA engineers had to consider the very great vehicular traffic needed to service the airfield and bring passengers to and from it.

To determine the maximum potential traffic to be handled and provided for, statistics were assembled and an analysis made of the total regional traffic, and the part of it that was to be expected at Idlewild. In 1956 a total of 4,490,050 passengers were handled and over 131,000,000 lb of cargo and 41,000,000 lb of air-mail.

By 1965, according to the best available forecasts, Idlewild alone will be handling about 6,750,000 domestic and 1,760,000 overseas passengers a year.

Armed with these figures, PNYA en-

Tomorrow

gineers planned to utilize the entire 655 acre central area for handling passengers. The areas adjacent to the runways would be used as sites for hangar development. It is this central area that is known as the "Terminal City". (ENR March 10, 1955, p. 46).

The road and bridge contract, now about 87% completed, was awarded to Tully and DiNapoli, general contractor, for $3.7 million. Other contracts awarded the same firm were $450,000 for roadway lighting and $1.2 million for landscaping features, such as nine pools with circumferential walls, circular bridge to control tower, three deep well pumps, two filter pumphouses and colored lighting for vertically sprayed water laid out in concentric rings.

The $3.7 million contract included 6 mi of 24 ft wide asphalt surfaced roads; 20,000 ft of storm drainage, 7,000 ft of sanitary sewers, 600 ft of depressed roadway in "water proof sections"—where road is below groundwater level—six prestressed concrete bridges, 7,500 ft of water lines and 334,000 ft of electrical duct-lines.

• Water, time and settlement—The major construction problems encountered in the road building program were time, water and settlement. Time factor was extremely important since no interruption of airfield activity was permitted yet completion date was set for June 1, 1957.

As noted, the airport site was originally a tidal swamp. It was a somewhat firm sand overlain by a centuries old "meadow mat" of peat and organic silt, several feet thick. It also had been a general dumping ground for wastes and debris from nearby communities. When the area was built up in preparation for the new airport this mat was covered with dredged sand from the bay, hydraulically placed.

The covering and the underlying sand is a good, sharp sea sand, which gives good bearing and friction values. "Meadow mat" however is capable of holding vast quantities of water and is compressible to a fraction of its original thickness.

At locations where excavation was to be carried at levels through and below the mat, the contractor was confronted with the ticklish problem of water. Pumps had to be operated continuously to keep the water level in the excavations below the construction activity zone.

The sandy sides of the excavations would wash into the pits requiring that much larger excavations be made than was actually required for the particular facility.

• Handling a "sponge"—Joseph Paternostro, job superintendent for Tully and DiNapoli, describes the "meadow mat" as a huge sponge compressed between two stones, in such a manner that the trapped water cannot escape. But if a puncture is made the water spouts out as if it were under pressure.

It was in these low sections of roadway that "waterproofing" was required. Where subgrade was established at zero, the sections had to be dewatered to minus eight elevation.

The undesirable material was mucked out and replaced with suitable sand. Massive mats of concrete, up to 3½ ft thick were placed and waterproofed. This waterproofing consisted of three separate treatments of hot applied tar in addition to a covering of half-inch fiber board. The roadway sections or bridge footings were built up on this protective core.

Similar water problems were encountered when the deepwell excavations were made, and when the footings for some bridges were being erected.

• Settlement by weight—Earth surcharges were needed to obtain maximum settlement before actual road construction could begin. To accomplish this, a total of about 250,000 cu yd of excavated material was placed by carrying scrapers and an additional 50,000 cu yd of earth was hauled into the area from outside the construction site and piled at selected spots.

After the surcharge material was in place, the area remained static for a minimum period of three months. A 3 ft x 3 ft metal plate with a standpipe fixed to it, was placed upon the surcharge. Periodic checks were made until maximum settlement was reached. The settlement varied throughout the road area from nil to ¾ in.

Heavy settlement was evidenced in only one area—in the powerhouse section—where a settlement of 1 in. occurred in one week and a final 3 in. was noted over three months.

After final inspection indicated maximum settlement, approval to continue work was granted.

The excess surcharge was then pushed to the sides and a subgrade for the roads was rolled, with six inches of compacted

. . . At the casting yard, prestressed beams are post-tensioned

WORKMEN POST-TENSION beam by placing grip edges and plates at the ends, and tightening bolts using a hydraulic jack.

THE PRESTRESSED concrete beams are stripped of the forms and are made ready for moist curing at the manufacturer's yard.

screenings. Four and one half inches of crushed stone, averaging 1½ in. when compacted, received a penetration shot of asphalt and then was sealed with ⅜ in. stone. Upon this was placed a 2 in. asphaltic concrete binder course covered with 1½ in. topping of asphaltic concrete. Throughout the time that this work was in progress paved detour roads had to be constructed and maintained to supplement the roads closed to traffic.

• **Prestressed bridges**—Intersections of the new roads on the same level has been completely avoided. Six prestressed concrete highway bridges do the separation trick.

The original bridge design, with H20-S16 live loading, called for structural steel beams with concrete decking and asphaltic concrete wearing surface. As a result of last summer's steel strike the structural steel was not forthcoming and long delays were contemplated. With the completion deadline set for June 1957 other means of completing the bridges had to be initiated.

Prestressed concrete beams were the logical substitution.

Precrete Inc., was retained as a subcontractor to manufacture the beams.

George S. Pinter, consulting engineer for Precrete, explained that selection of a box girder shape for the beams would have been too clumsy and an I-beam shape was not acceptable because of unpleasant shadows. No stiffener ribs were to be permitted in the outer face of fascia beams.

Architectural requirements were made critical: the final choice was a teardrop shape.

Using concrete would result in an unavoidable increase in dead load weight over that in the structural steel, so a reduction was accomplished by using a lightweight concrete for the bridge decking—a 4,000 psi concrete with expanded slag and sand aggregate. The decking was topped with a 2 in. asphalt wearing course, so that the bridges and roads were similarly surfaced.

• **Bridge details**—Beams up to 50 ft were designed with pretensioned steel strand reinforcement, and in longer beams post-tensioned alloy steel bars were added to the pretensioned strands to meet the stress requirement. It was advantageous to use as many steel wire strands as was practical in the pretensioning. With post-tensioning in addition, it was possible to save on structural steel since only a small amount of structural steel bars were required.

The 30 in. deep beams for spans up to 40 ft required 36 ⅜-in. dia pretensioned steel strands. The 50 ft long, 42 in. deep beams were made to contain 44 ⅜-in. dia pretensioned steel strands.

The 65 ft beams contained 44 ⅜-in. dia pretensioned steel strands and 31 ⅛-in. dia alloy steel bars.

The 81 ft beams contained 44 ⅜-in. dia pretensioned steel strands and 71 ⅜-in. dia structural steel bars.

The superposition of the two tensioning methods combined the advantages of both.

Pretensioning offers the compression force at a lower cost because the whole group of strands can be stressed in one operation. Mechanical anchorage, preformed holes for the tendons, and grouting is not required, and it is known that post-tensioning requires less compression force.

High tension steel and concrete must be provided to counteract the superimposed load bending moments only. The stresses due to the beam's dead load moments can be offset by increasing the eccentricity of the steel near midspan.

The stressed bars draped in the vertical plane are anchored at the ends near the top. The vertical component of the post-tensioning force helps carry the vertical shear which is substantial in beams spaced as far as 8 ft on center.

By flaring the stressed steel bars horizontally, a greater eccentricity was obtainable.

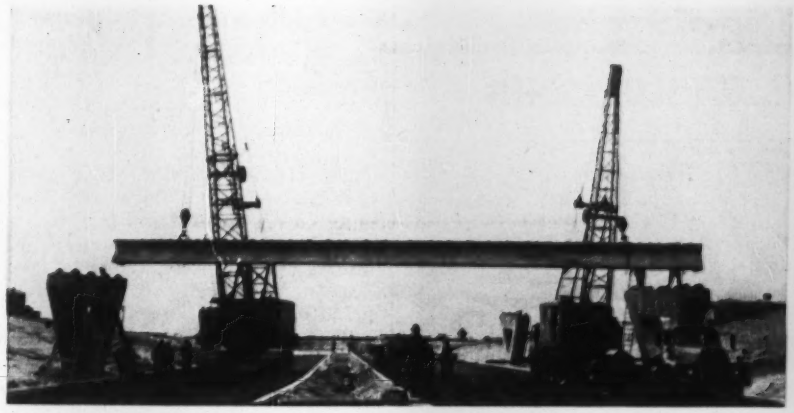
• **Casting procedures**—Two or three beams were cast at one time, depending upon the lengths. The steel two-piece forms, built especially for the particular tear drop shape were lined up, the required number of steel strands were anchored at one end and fixed onto wedge grips at the tensioning end—through a multi-holed steel plate for proper spacing—and stressed by a hydraulic jack. The pretensioned strands also acted as racks for the stressed steel and stirrups. This of course made for easy placing and a saving in intermediate grade steel. Steel for post-tensioning was also placed into the forms, encased in a flexible tube with smaller vertical grouting tubes extending to the top of the finished concrete beam.

Where beam ends were to be cut askew to match expansion joints in the sidewalk, the form ends were adjusted to the desirable degree of skew.

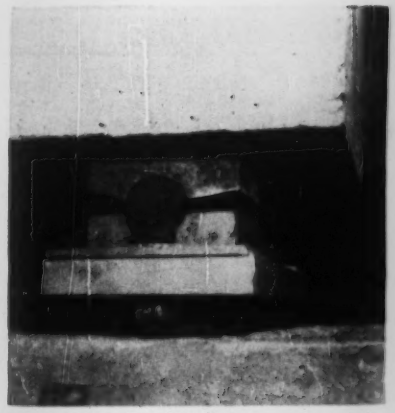
To maintain the architectural feature—what Pinter calls the "slender airborne look"—all along the outside of the fascia beams, the end blocks for fascia beams were applied to the inner side only. All inside beams were designed with the usual end blocks for better anchoring and stability at the piers.

The 42 in. interior beams were designed with the same shape to save forming costs.

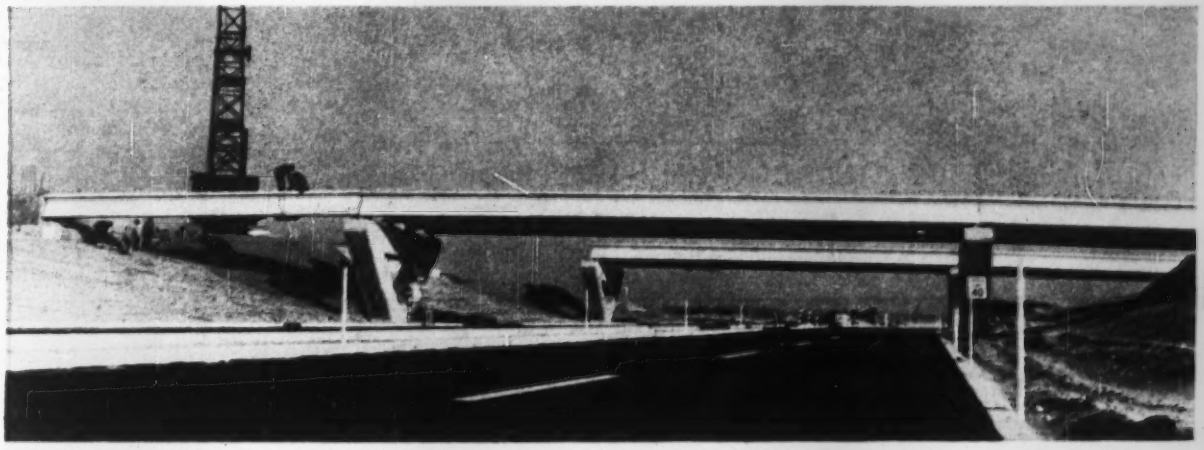
It is notable that the 30 in. fascia beams were built with an asymmetrical shape. Only the outer face features the characteristic tear drop shape. The inner face of these beams is "I" shaped. The asymmeterical shape did not cause any measurable lateral distortion. The webs of the 30 in. interior beams were widened toward the ends from 8 in. to 10 in. to help resist shear. The combination of the two tensioning methods yielded the additional advantage of rapid reuse of the stressing beds. The prestressing force was applied in two



TWO CRAWLER CRANES lift longer prestressed and post-tensioned concrete beams onto the triangular bridge piers. Beams were shipped to the job site on pole carriers.



BEARING PLATES and pin in position on a typical bridge abutment in Idlewild.



BRIDGE ERECTION nears completion as a single crane is used to assemble the shorter spans. Diaphragms were cast in place.

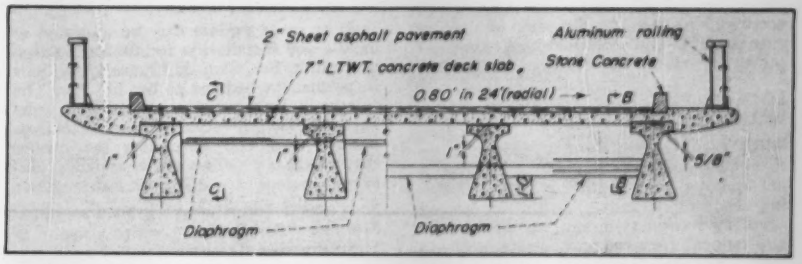
steps. The stresses induced at the release of the pretensioning force were resisted by 3,000 psi concrete with sufficient safety. With overnight steam curing and high-early strength cement this strength can be obtained.

After the forms were stripped and after a few days of additional moist curing in storage, the concrete strength reached 4,000 psi. Post-tensioning was applied to the alloy steel rods within the flexible tubing by placing plates and grip edges at the ends and tightening by bolt action.

Both ends were then concreted over and grout was forced into the tubes to fill the space in the flexible tubing surrounding the steel rods.

After the curing period, the beams were shipped to the job site on pole carriers. The weight of the beams varied with their lengths from 8 tons to 35 tons. The trucks therefore could only carry one beam at a time, making the task time consuming.

Two crawler cranes were used to lift the beams onto the piers. Because the beams were post-tensioned, an added factor of safety was offered against stress



A TYPICAL CROSS-SECTION for one of the Terminal City bridges showing the tear drop beam sections as well as the overhanging concrete sidewalk.

produced by dead loads when lifting was taking place. The erection procedure was to some extent similar to erection when using structural steel members.

Bridges No. 1 and 2, similar two span crossings, were erected at night because of heavy day-time traffic. One had spans of 64 ft and the other of 66 ft, with 24 in. wide by 42 in. high beams, with minimum web thickness of 6½ in.

Bridges No. 3 and 4 were made up of three bays with spans of 50 ft; 81 ft; 50 ft. The 81 ft beams were 28 in. wide, 42 in. deep with a 7 in. minimum web thickness.

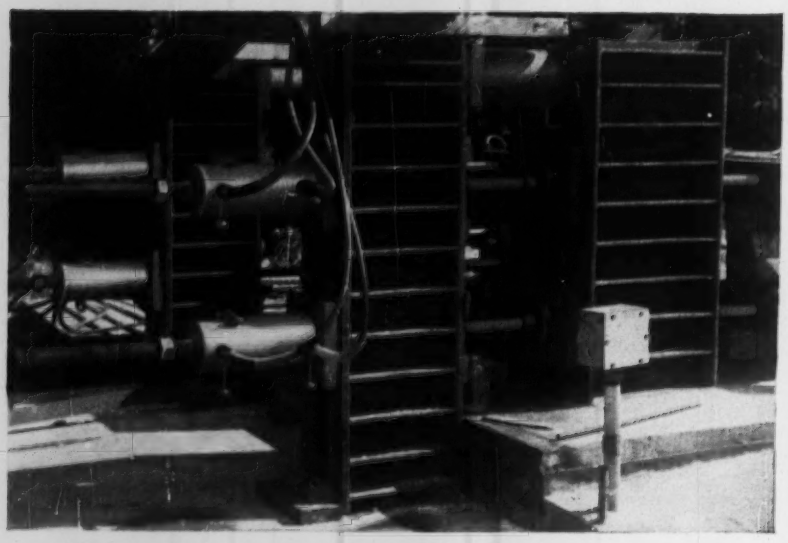
The fascia beams were aligned in the bridge to match the outer face of the beams of different widths.

Likewise, No. 5 and 6 bridges had three bays of spans varying from 32 ft to 40 ft.

The cast-in-place diaphragms, 20 ft on center, featured some unusual detail.

At each diaphragm two ¼ in. dia threaded inserts were built into the fascia beams at the inter face. Four foot dowels were screwed into the insert, overlapping No. 10 bars threaded through

How to Simplify Rigging for Concrete Tensioning Beds



This concrete prestressing bed is equipped with four "Re-Mo-Trol" 100-ton center-hole hydraulic rams operated by an electric pump at 10,000 P.S.I. The rams are mounted on steel frames to which the wire strands are anchored. Note pull-rods through Center-Holes of rams. Holding tension on rods by means of lock nuts at end of ram travel permits resetting for additional "bites". . . permits unlimited travel range.

Simplex Hydraulic Pullers Provide Portability and Unlimited Travel; Make Load Spacing and Balancing Easy

Pre-tensioning and post-tensioning concrete is simple and efficient with Simplex Hydraulic Pullers. Simplex Center-Hole construction permits power to be applied in *direct-line* pull through a ram to eliminate eccentric loading. At the same time, rigging is simple and economical because complicated back-up devices are not needed.

LOCKING PULL-RODS PROVIDE UNLIMITED TRAVEL

With the Simplex System, pull-rods go through the Center-Hole of the Puller and are attached to the pulling tangent holding the wire strands. The puller, braced against a stationary mount, moves the rods and tangent forward with direct, uniform pull. Unlimited travel may be obtained by locking the threaded pull-rods in tension with a lock nut after the full stroke of the ram is completed. The ram is then reset for another "bite". The procedure may be repeated as often as necessary, limited only by the length of pull-rods used.

LIGHT WEIGHT UNITS ARE EASY TO MOVE AND PLACE

Two or more pullers may be mounted to handle any installation for the production of Double-Tee, Slab or Channel members in permanent beds or at the job site. The relatively light weight of Simplex units permits easy movement from one bed to another and easy alignment for proper spacing. This provides self-equalizing, uniformly balanced pulling of either single or multiple strands or cables.

Simplex "Re-Mo-Trol" units consist of High-Pressure Rams actuated by hand, air, electric or gasoline powered pumps. Standard rams with 10" stroke are available in 60 and 100 ton models and with 22" stroke in a 100 ton model. Special units are available up to 600 ton capacity.

For details on the selection and application of Simplex Hydraulic Pullers for tensioning concrete, write for Bulletin: "Concrete 57".

2 100-ton Simplex "Re-Mo-Trol" Center-Hole Hydraulic Rams actuated with Electric Powered Pump. Note 2 Shut-off Valves for manually controlling even travel of the 2 Rams.

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. . . Idlewild: Landscaped

preformed transverse holes in the interior beams. This was embedded providing the connection. This detail was used instead of the customary transverse post-tensioning.

The beams were placed 8 ft on centers. Sidewalk sections overhang in the outer curves up to 5 ft-5 in. from the centerline of the fascia beam. The bridges are almost all on vertical and horizontal curves and are super-elevated for added safety.

The sidewalk is separated from the asphalted roadway by a concrete curbing topped with a safety railing. On the outer edges there are aluminum handrails.

The reinforced concrete bridge piers are in the shape of inverted triangles with a similarly shaped core in the center.

This design necessitated added cost for construction because of the greater amount of labor required. The contractor had to put more forming and carpenter work hours into these piers because the hollow core had to be formed and supported as well as the outside sections.

• **Landscape features**—For landscaping, thousands of plantings, nine pools, circular, oval and some rectangular in shape are being constructed within the "Terminal City" plaza. To supply these pools with water, three deepwells, some 85 ft in depth are being excavated and to purify the brackish water, two filter pump houses must be built.

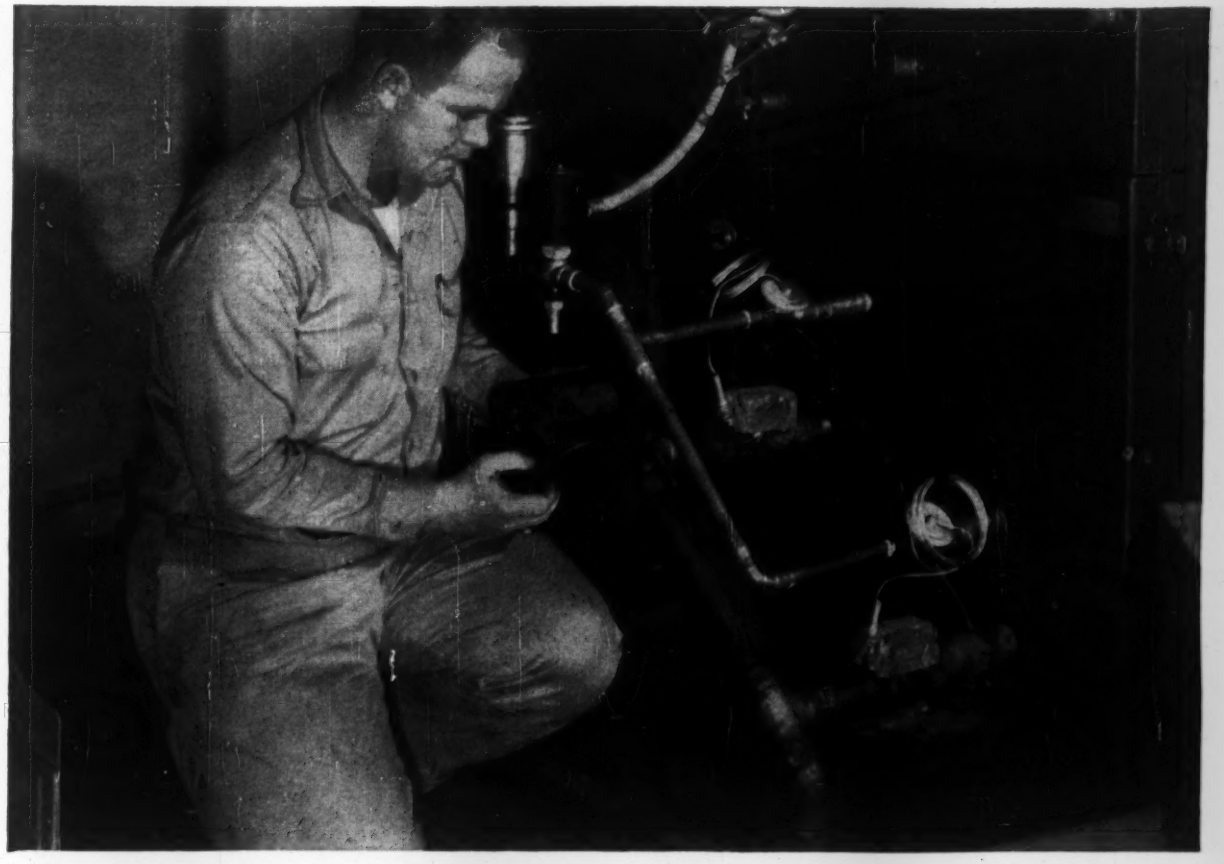
The central oval pool will be 200 ft in dia with a ring of fountains on the outer edge. Other fountains and lights will be placed in concentric rings toward the center with color lighting for panoramic and ornamental night displays.

The pools are enclosed by a 24 in. reinforced concrete wall cast in place with no footings.

The base of the pools will be six inches of soil cement, mixed and placed on the spot then covered by a three ply membrane and a six inch layer of loose fine gravel.

A circular footbridge will rise around the larger circular pool as a ramp from the east and west side to a two story level on the south side. From here it spans the roadways, continues through the second story of the control tower structure and bridges into the arrivals building.

Because of a peculiar architectural design, the contractor is faced with a complicated forming problem. The under side of the foot bridge is shaped as a half ellipsoid or a thin arch. Attached to the top ¼ segment is the promenade deck, all supported by a line of reinforced concrete columns.



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No cold line vapor barrier is needed to keep Armaflex dry when used within its recommended temperature and humidity limits. The material's foamed plastic composition completely seals out moisture and air. Highly efficient Armaflex saves heat on hot lines to 200° F.

Flexibility and resilience of Armaflex allow easy application. Waste is negligible. Fitting covers are easily fabricated from miter-cut pieces. Armaflex is available in 6′ lengths, for pipes and tubing up to 3⅛″ o.d.

Send for free booklet giving complete details on this new insulation. Armstrong Cork Company, 2005 Wallace Street, Lancaster, Pennsylvania.

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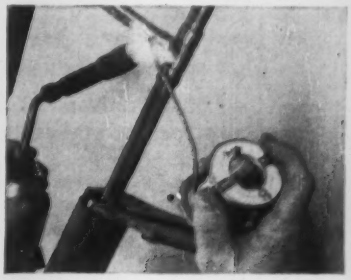

Self-extinguishing Armaflex is completely safe to apply before sweat fittings are made in copper tubing.

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Why?... Because on-the-job performance and low operating costs prove FORD trucks cost less

Billions of miles of on-the-job experience have proven Ford's dependable performance and low operating costs to the big fleet owners.

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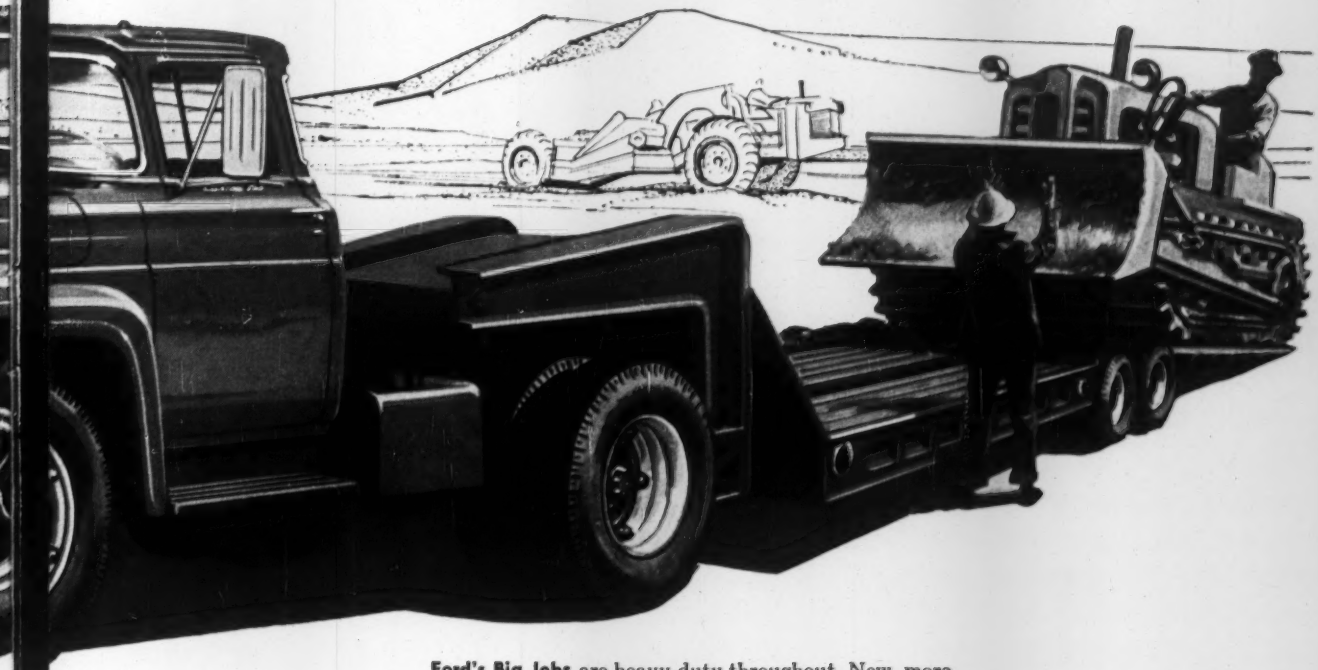

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Atlas Copco Pacific Photo

At the Trinity Dam site:

A River Will Flow Here

Completion of this 34 ft dia, 2,280 ft diversion tunnel will permit the Bureau of Reclamation's Trinity Dam to get under way. Tunnel excavation under a $1.3 million contract awarded in May, 1956, to Gates & Fox Co., Burlingame, Calif., is virtually complete. The tunnel will be lined to 28 ft dia under the $48.9 million main dam contract recently awarded to a joint venture headed by Guy F. Atkinson Co.

Feature of the Gates & Fox work was a truck-mounted jumbo that carried 8 drifters on hydraulic jibs at ground and first deck levels. On the top level of the jumbo 6 jack-leg drills also worked the tunnel face. All drifters and drills were equipped with 1¼ and 1⅜ in. detachable bits.

The jumbo worked both tunnel headings, moving from one to the other under its truck power. This permitted firing of six 8 ft rounds every 24 hr. Mucking equipment also alternated between up- and down-stream heading.

The tunnel presented some unwelcome surprises. First, portal excavation was in poorer rock than expected and so totaled 228,000 cu yd instead of an estimated 117,000 cu. yd. Then, because of the faulted andesite rock in the tunnel proper, the supports—8 in. WF ribs at from 2 to 6 ft centers—overran the estimated quantity by more than 100%.

The ribs were assembled in one piece on the floor of the tunnel, then hoisted onto a carrier mounted on rails on the jumbo. The carrier moved the rib forward for jacking into position. In addition to the ribs a substantial amount of metal lagging was needed. Large irregularities or holes behind the lagging was dry packed with crushed river gravel to minimize later concreting.

The jumbo excavated the arch of the tunnel down to rib footblock level some 8 ft below the tunnel springline. This developed about 28 cu yd of material per foot of advance. An additional 6 cu yd per foot was excavated from the invert after the tunnel had been holed through.

Kirk H. Fox was project manager on the diversion tunnel contract for Gates & Fox. Louis B. Ackerman is construction engineer on the Trinity work for the Bureau of Reclamation.

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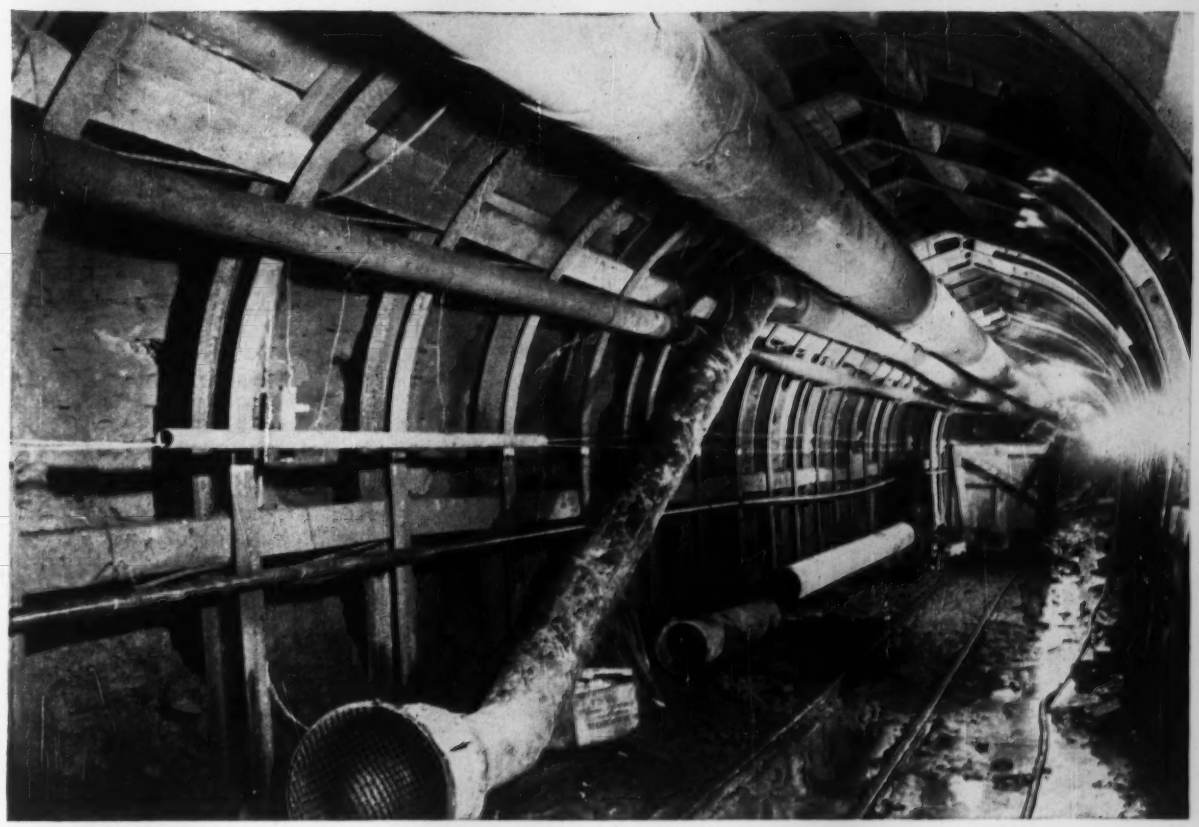
Delivered Where You Want It



No matter how deep you go underground, you can take fresh air with you and get rid of stale air, gases and fumes through dependable Naylor Spiralweld pipe.

Over the years, contractors have come to recognize the advantages of Naylor over other lightweight pipe. In large diameter vent pipe, for example, the exclusive Naylor spiral lock permits the use of lighter gauge material without sacrifice of strength or safety — particularly in push-pull operations.

Along with this obvious economy, you save time and money by using the one-piece Naylor Wedgelock coupling for fast, positive connections — especially where only one side of the pipe is in the open.

Whether you need pipe for ventilating, air and water, hydraulicking, dredging or materials handling, it will pay you to look into this Naylor pipe and coupling combination.

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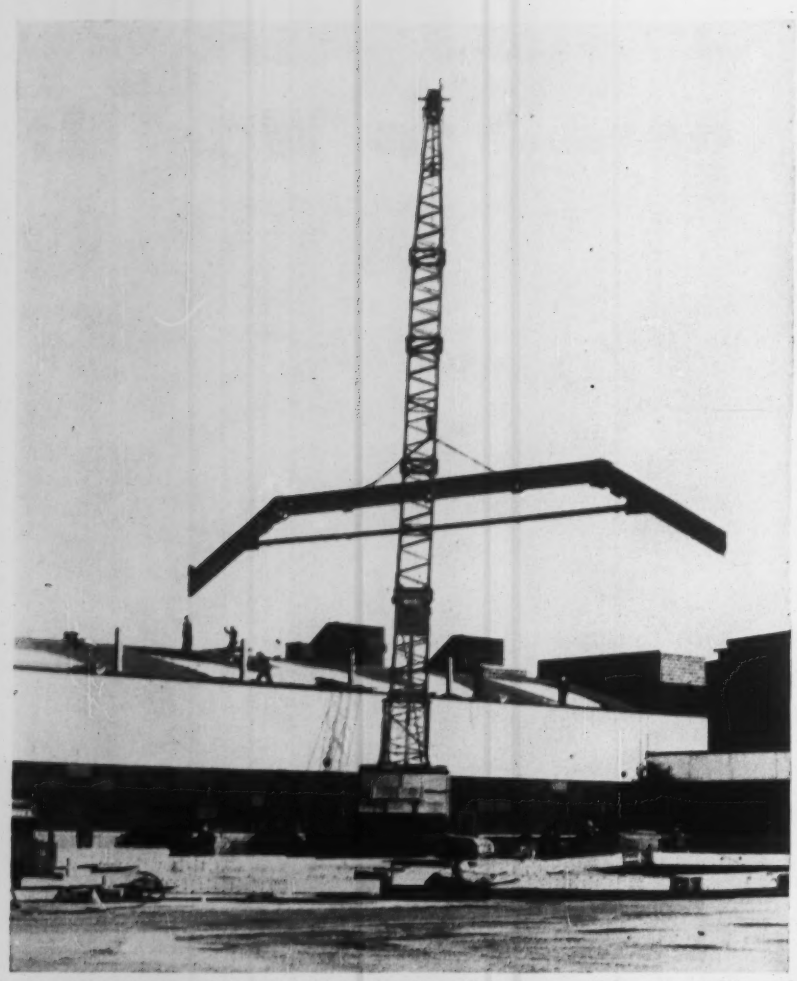
Timber building at Farmingdale, L. I., had headroom increased 11 ft by cutting the ties of its roof-supporting arches and transferring the loads to steel frames erected above the roof.

More Height

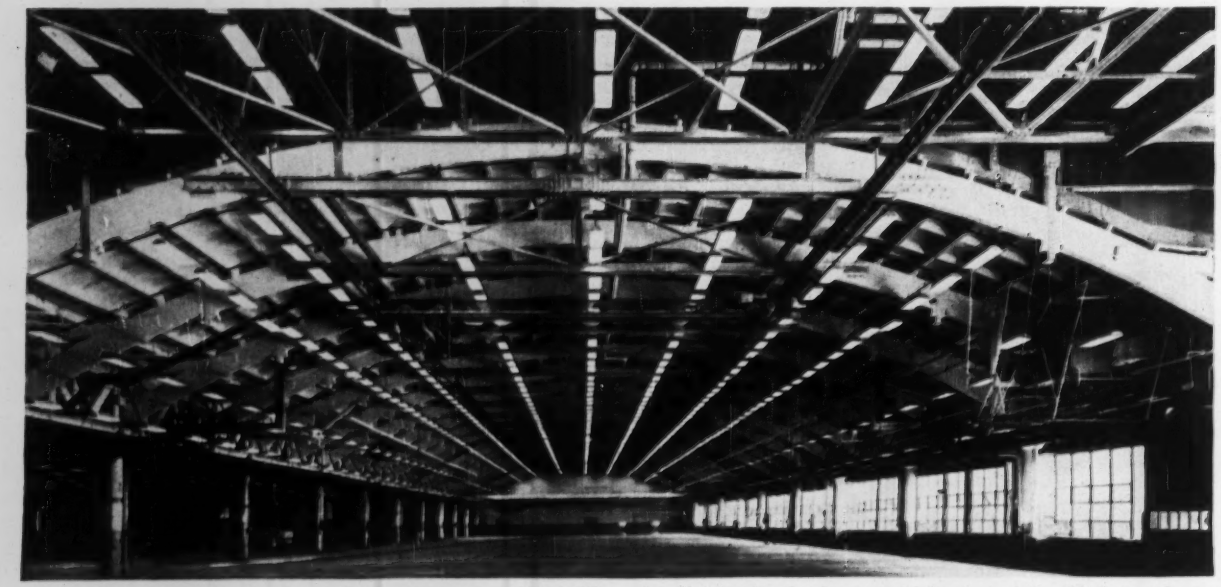
Alfred Zweig
Structural Engineer
Albert Kahn Associated Architects
and Engineers, Inc.
Detroit, Mich.

Headroom in an existing one-story timber structure, recently acquired by Republic Aviation Corp., was increased from 16 to 27 ft without changing the elevation of the arch-supported roof. It was done by removing the ties of the wood arches supporting the roof and hanging the arches from steel frames installed above the roof.

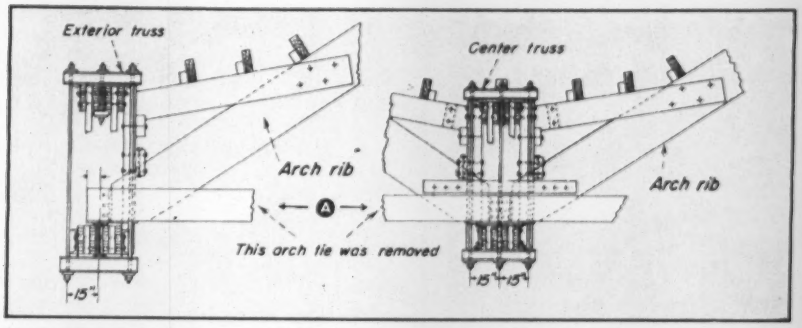
The structure, originally housing production facilities of the Ranger Aircraft Division, Fairchild Engine and Aircraft Co., in Farmingdale, L. I., consists of two 100 ft bays 480 ft long. Clear height from floor to the under side of the roof framing was 16 ft.



STEEL FRAME, from which existing roof arches will be hung, will be supported by stub columns extending through roof. Frame ties decrease its horizontal thrust.



COMPLETED INTERIOR, after arch ties were removed, has 27 ft headroom at the center of the bay. Where wood ties remain in adjoining bay headroom is 16 ft. A steel tie added near the top of the arch also acts as support for the overhead crane rails.



THIS TIE (A) was removed from existing roof arches after they were suspended from steel frames placed above the roof. Headroom was increased by 11 ft at the center of the bay.

Without Raising The Roof

A manufacturing process to be carried on by Republic in the southerly bay required a clearance in excess of 27 ft, use of a five-ton overhead crane and an overhead door with a clear width of 70 ft.

The original structure (ENR July 29, 1943, p.) supported its lightweight roof deck on wood purlins spanning 20 ft and resting on three-hinged arches with wood ties. The arches were spaced 20 ft c-c and spanned the 100 ft width of each bay. They were supported either on concrete columns, spaced 40 ft c-c, or wood trusses, which transferred the loads from alternate arch to the columns. These arches rest near the bottom of the trusses on steel members that form a saddle-like yoke and transfer the load to the top chord of the trusses.

At the interior truss, the arches of the two bays balance each other, each arch reaction acting 15 in. from the central plane of the truss. On the outside trusses, where only one arch is supported, the arch is centered on the truss to avoid undue twist.

• **The way it was done**—To meet the requirements of the new process, three possible procedures were investigated: (1) the obvious one to tear down the building and replace it with a new one; (2) to raise the roof to the desired height, and (3) to eliminate all the members obstructing the clearance without raising the roof. Careful studies of cost and time elements led to a combination of the first and last schemes.

To provide the overhead door with 27 ft headroom and a clear span of 70 ft, the southwesterly 80 x 100 ft portion of the structure was taken down and replaced with a steel-framed addition designed to carry the overhead door and the specified cranes.

The remainder of the structure was kept intact. The increased head-room was obtained by cutting and eliminating the existing wood ties at the bottom of the three-hinged arches where they interfered with the desired headroom.

• **Arch becomes hanging beam**—Cutting the wood ties of the arches would have exerted a horizontal trust on the roof structure, which was not designed to withstand such a force. To take this force, rigid steel frames were erected on top of the roof, and the arches hung from five intermediate points on the steel frames above.

Basically, the arch was converted into a beam on seven supports, the horizontal thrust being reduced to a negligible quantity. The thrust was further decreased by adding a new steel tie to the arch 27 ft above the floor. The tie consists of a pair of channels, which serve also as support for the runways of the 5 ton overhead crane.

• **Exterior frames**—The steel frame installed above the roof to support the arches consists of a 36WF 170 reinforced at the ends with top and bottom cover plates. To reduce the beam size and minimize the horizontal thrust of the frame, a tie consisting of two 8 x 8 x ¾ in. angles was provided.

The steel frames are connected to short stub columns, which pass through the roof and rest on the existing timber trusses or the concrete columns.

• **Unbalanced moments**—To avoid one-sided loading and twisting of the center truss, it was necessary to place the stub columns 15 in. to one side of the center of the truss. The load of the steel frames with alternating lengths, distance from the center of the truss as the load of the undisturbed arch of the adjoining bay.

The location of the alternate stub columns coincide with the location of the concrete columns. This resulted in

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- ☐ **TECHNICAL REPORT NO. 3** . . . DURAJOINT Tests and Test Results by the U. S. Testing Company, Inc.
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DEPT. 16

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. . . More plant headroom

steel frames with alternating lengths, those at columns being 15 in. longer than those at intermediate points.

• **Stress analysis**—A carefull analysis was made of the interaction between the new steel frame and the existing wood arches including the new channel tie. After establishing the three statically redundant forces in the system, both vertical and horizontal deflections were figured, and all new frame members were chosen. Consideration was given not only to the permissible stresses but especially to the resultant horizontal deflection at the springing line of the three-hinged arch after removal of the tie. A total horizontal deflection of ½ in. was regarded as permissible and harmless to the wood truss.

• **Deflection**—To keep these movements to a minimum, the arches were shored at midspan and raised ⅜ in. before erection of the new steel beams and channel ties. The raising was accomplished with wedges driven between the arch and a temporary shore. The actual measured horizontal movement after the ties were cut was between ¼ and ⅜ in.

The structure behaved in every respect as predicted by the stress and strain analysis.

The plans and specifications were prepared by Albert Kahn Associated Architects and Engineers, Inc., Detroit, Mich. The general contractor was Fisher-Malik, Inc., Bayshore, L. I. The structural steel was fabricated and erected by the White Plains Iron Works, Peekskill, N. Y.

Road Department Program Retrains, Upgrades Men

Following a lead set by several other states, the North Dakota State Highway Department is alleviating its engineer shortage by retraining and upgrading its own employees.

Under an arrangement with Bismarck College, 25 semi or nontechnical department men were carefully selected for attendance in classes of first and second year engineering courses. The men were chosen from survey and field laboratory groups that are usually almost entirely idle during the winter months but are kept on the payroll for availability.

This winter, the in-training men put in four hours each morning on department work, and attend school for four hours each afternoon. Courses offered include surveying, geometry, trigonometry and engineering drawing. Curriculum costs are borne by the department and the men are paid their regular salaries while studying.

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Welded frame of a Ft. Worth, Texas, office building almost missed setting a record . . .

Redesigned with aluminum walls (right) to add two floors, the structure became . . .

World's Tallest Welded Building

Frederick S. Adams
District Engineer
American Institute of Steel Construction
Dallas, Texas

The Continental National Bank Building of Ft. Worth, Texas, is the world's tallest all-welded building. It is a 30 story structure providing 261,000 sq ft of office space at a cost of about $5.2 million.

When the structure was originally designed in 1950, plans called for a height of 28 stories with masonry exterior walls and floors of steel decking topped with concrete. Only the first four stories were completed before the Korean War brought construction to a halt.

In 1955 when the owner, the Continental National Bank of Ft. Worth, decided to finish the building, a study was made to determine the feasibility of using lightweight concrete topping for the floors and eliminating the masonry exterior in favor of metal curtain walls. It was found that these changes would save enough weight so that the existing columns and foundations could support two additional floors, thereby making the building the tallest of its type.

In designing the structure, consideration was given to repetitive design and duplication of detail. Welded connections were chosen because they were simple, allowed for continuity of design and offered a simple connection without clips and other obstructions that add to the erection costs.

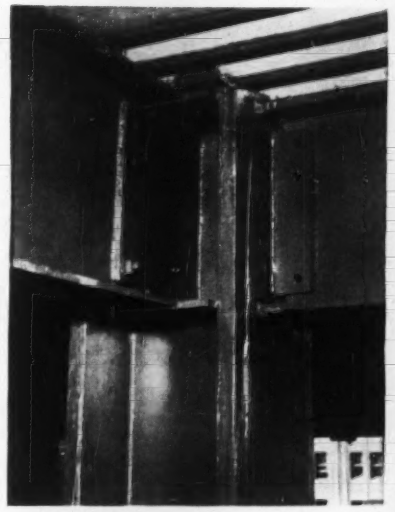
• **Repeating the floor layouts**—Framing the spandrel beam webs into the exterior face of the columns and aligning the exterior faces of the columns resulted in the lengths of floor beams remaining constant from floor to floor. This, in many cases, allowed the use of the same beam detail for a similar location in all the floors. Considerable savings in material were made by designing the members as fully continuous.

A typical bay is 23 x 25 ft. Each floor was composed of 120 beams, 64 of which were identical for each of the 26 floors. The 120 beams were fabricated as 86 beam types, 40 of which were used on each floor of the building. About 1,379 tons of structural steel were erected.

Use of repetitious design permitted the fabricator, Mosher Steel Co. of Dallas, to mass produce a large number identical beams at lower cost.

• **Putting the Frame together**—Erection of the steel frame followed conventional procedure, except that a proper allowance for shrinkage due to welding was necessary to insure proper alignment of the columns and plumbing of the building.

It was found that for the average beams there was an approximate shrinkage of $\frac{1}{8}$ in. at the butt joints. So it



CONNECTION was made by butt welding girder web and flanges to the column.

was necessary to spread the joints by this amount before welding. Then, when the joints were welded, columns remained plumb and accurate control of dimensions was maintained. The final variation in overall dimensions did not exceed ¼ in.

• **Welding sequence**—The welding sequence adopted called for welding the stringer beads on the flanges and then welding the shear connections at the web.

Welding of each floor was only 75% complete at the time the derrick was jumped to a higher level. This meant that a crew of welders was working two floors below the erection crew, finishing the final welding of connections. Erection of the 26 floors was completed in 13 weeks.

An estimated 6 lb of welding rod per ton of steel was required. E6010 electrodes were used for all field connections. Inspection of erection and welding was handled by the Southwestern Laboratories of Dallas. In addition to visual inspection of the welds, radiographs were taken at random locations. No indication of unsound weld was found on any of the radiographs.

• **Other structural details**—Curtain walls above the fourth floor are insulated aluminum wall panels bolted to clips on the fireproofed steel frame. The roof is insulated with 1½ in. rigid board over a steel deck. The windows are fixed, aluminum type that open only for cleaning.

The entire building is air conditioned by compressors and heating equipment located in the basement.

Preston M. Geren was the architect, and Don Kirk was the engineer. The RAMBO Construction Co. was general contractor. All are from Ft. Worth.

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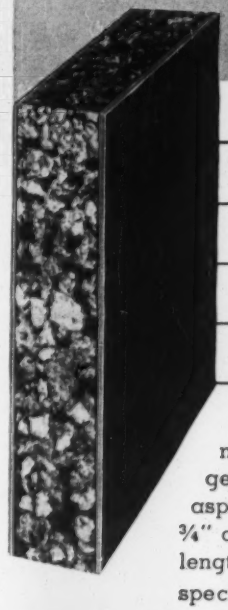

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KORK-PAK—an exclusive Servicised development—is composed of cork granules bonded together with asphalt between two sheets of heavy asphalt saturated paper. Available in ¼", ⅜", ½", ¾" and 1" thicknesses, widths to 36", and standard lengths of 5 or 10 feet. Longer lengths supplied on special order.

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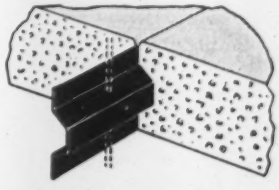

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★ Rigid . . . easy to handle and install

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Maj. Gen. Lee B. Washbourne, Assistant Chief of Staff for Installations, Hq., U.S.A.F. (left) talks with his aide, Brig. Gen. C. Pratt Brown

USAF Engineers—A Few Handle Billions

The first thing to be remembered in any discussion of the Air Force's Air Installations setup is that it is not a parallel of the Army's Corps of Engineers, or the Navy's Bureau of Yards and Docks.

Something like 37,000 officers and men in Air Force blue are engaged in air installations engineer work—construction, engineering and maintenance at installations. The Air Force itself is spending an average of $1.2 billion yearly on new construction, $500 million a year on maintenance and $30 to $40 million a year on so-called minor construction.

But Maj. Gen. Lee B. Washbourne, Assistant Chief of Staff for Installations, has no troops to command, no "corps" to administer.

Reporting directly to him for orders are approximately 260 officers and 730 civilians.

So when you talk of Air Installations you speak in reality of two separate organizations.

One includes the installations engineer at the field command or base level, the other is the Installation Engineer attached to General Washbourne's office.

At field level, the IE functions much as does the Army's familiar Post Engineer—with troops assigned to him, he is responsible for the maintenance of the base and its buildings, runways and services.

However, he reports directly to the field commander and to his own major command (such as the Strategic Air Command or Eastern Air Defense Force) not to the Assistant Chief of Staff for Installations.

General Washbourne's job—and that of his staff—is a dual one.

In one capacity, he is advisor on engineering matters to the Chief of Staff of the Air Force.

In his second capacity, he is the owner's representative in dealings with agencies actually doing construction for the Air Force—standing in much the same relationship as an architect to a private owner. Additionally, his staff is available to the field-level IE's for consultation and advice.

In one special case only—the construction of the Air Force Academy in Colorado—is the Installation Engineer actually supervising construction, through a special field agency, the Air Academy Construction Agency.

• **Special consultant**—The Air Force exercises complete control over its construction program. Here's the way it works:

Before the Air Force builds anything in the way of a major installation, two activities must go on almost simultaneously—a decision must be made on the operations level that the facility is needed, and action on the legislative level to get authorization and funds to pay for it.

The operations level decision, of course, is based on the Air Force's view of what it must have to carry out its mission as the nation's chief ready defense arm. It may grow out of the development of a new aircraft or missile, or a new strategic concept.

In any case, such a decision will include certain fixed requirements. If the base planned, for example, is to house the service's newest operational heavy bomber—the 400,000 lb jet powered B-52—certain runway, hangar and service facilities will be required. Such a base also will require a specific complement of men, and facilities for them and possibly their families—such as housing, mess, recreational areas, probably schools and churches, perhaps food markets. As advisor to the Chief of Staff, the Washbourne office, of course, already has been in on these basic determinations.

But at the point that the decision is made, and legislative approval has been granted, the IE is called into the picture in earnest.

The first move in any construction operation is to send a site-selection team to the area in which the active command wants its base—a team composed of engineers, aircraft operations analysts and real estate men, representing Headquarters, USAF and the major command concerned. The team inspects several possible sites in the area, some of which may already be available through local donation of land or through previous purchase, or which may have to be taken.

The Air Force, incidentally, is very sensitive about the accusation occasionally leveled at it that it is a "land grabber."

Its bases are often very large—the one at Limestone, Maine, occupies about 9,000 acres—but the Washbourne office points out that much of the land it takes is donated by communities that want the installations in their areas. Then, too, the Air Force first endeavors to use land already owned by the government.

When the team makes its report as to engineering, economic and operational feasibility, HQ, USAF selects and recommends to Congress the one it thinks best suited to its needs. Having obtained Congressional approval, the Army's Corps of Engineers (in the case of a base on the U. S. side of the Atlantic) is called in, given the Air Force's general criteria for the work, and is then employed to prepare the actual detailed designs, hire contractors and get the work done.

The IE supervises the work, now in its capacity as architect, and inspects the finished product to recommend final acceptance for the Air Force.

Once the base has been accepted and a wing or group moves in, the field-level IE takes over to maintain it.

These field-level men, incidentally, do building and other repairs through their own forces where advisable and possible, and can even undertake some relatively minor new construction (in accordance with basic plans for the base) without consulting Air Force headquarters in Washington.

In general, however, they follow fixed Air Force policy to use private contractors where possible.

• **Why no troops?** The fact that the air arm has no direct troop complement has been the basis for considerable speculation and comment—particularly when, more than nine years ago, some 30,000 Army Engineer troops were transferred to Air Force control at overseas bases, then transferred back to Army control a year ago. Many observers called the loss of these troops a "defeat" for Air Force efforts to build its own corps.

Top officials, however, deny that the Air Force ever had ambitions to build such a corps' though it has an entirely legitimate reason for wanting to train officers and men in the arm's engineering needs.

"The answer," General Washbourne points out, "lies in the 'construction agency' system.

"When the Air Force became a separate arm in 1947, the basic law provided that it would use the construction capability of the other two services. This move left the Air Force to conduct its expanding program almost entirely by civilian contract.

"Under this arrangement—which, incidentally, is working very effectively—the force translates its operational requirements into finished work by making the plans, accomplishing the siting, delineating the real estate, defending the monetary requirements before Congress, and then passing the approved program to the selected construction agency.

"The Corps of Engineers accomplishes about 75% of the program; the Bureau of Yards and Docks between 5 and 10%; and the various major commands perform the remainder of the job."

• **Source of worry**—Loss of these troops and absence of any consolidated corps is a source of concern to General Washbourne, however, from the standpoint of developing a professional group versed in the sometimes peculiar requirements of the service arm.

"These organizations (transferred back to the Army) will lose their identity with the Air Force effort," adds the General, "and will thus fail to be a training ground for the younger officers and non-commissioned officers in learning Air Force requirements. Should they later be called upon to support the Air Force, with no background of training or experience in Air Force business, they will have no choice but to do as they are told, and thus lose their identity as specialists."

Nevertheless, the Air Force is building a professionally qualified group of engineers.

At the end of March, for example, there were about 1,800 officers and 3,800 of what the service likes to call "officer-type" civilians in the Installations Engineer program at all levels. Current plans, when they are fulfilled, will increase the officer complement to about 3,100.

In addition, about 33,500 uniformed airmen now are assigned to some 200 installations groups, squadrons and other organizations, and nearly 40,000 civilians also are engaged in this work.

Responsibilities of the installations officers have been expanded beyond the original field maintenance to include planning and siting of new construction, family housing and the definitive design of missile facilities.

• **Careful buildup**—Himself a civil engineer (degree from the University of

Air Force Will Shift Top Engineer Officers

NEW BOSS of engineering organization will be Brig. Gen. Augustus M. Minton, who will take over in June.

Brig. Gen. Augustus M. Minton, now commander of the 3345th Technical Training Wing at Chanute Air Force Base, Illinois, will become Assistant Chief of Staff, Installations, for Headquarters, U. S. Air Force, when Maj. Gen. Lee B. Washbourne completes his tour of duty in that post in June.

At the same time, Brig. Gen. Christian F. Dreyer, now director of installations, Headquarters, Strategic Air Command, will become deputy in General Minton's office, replacing Brig. Gen. C. Pratt Brown, who will retire.

General Washbourne, who has been head of the Installations office since 1952, is to be re-assigned to duty as Deputy Chief of Staff for Installations, United States Air Forces in Europe. He will replace Maj. Gen. Colby M. Meyers, who returns to the U. S. for retirement.

General Minton, a native of Mt. Carmel, Illinois, is a civil engineer graduate of the University of Illinois, where he also was appointed a Second Lieutenant in the Engineer Reserve. Recalled to active duty in 1941, he served in various staff positions throughout World War II, becoming Deputy Chief of Staff for Administration for the 20th Air Force, stationed in Guam. Since then he also has served as comptroller for the Alaskan Air Command, vice commander of the Air Training Command and commander of the unit at Chanute.

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. . . Af Men Do a Big Job

GEN. WASHBOURNE (above) and his small staff handle about $1.7 billion worth of Air Force construction annually.

California at Berkeley), and a graduate of West Point (1927) who served as an officer in the Corps of Engineers until he was transferred to the Air Force in 1948, General Washbourne has hand-picked the highly professional group that staffs his own offices and the 10 regional offices (including Alaska and the Mediterranean area).

• **Some CE's, but not all**—Many of the 260 officers working directly under the Assistant Chief of Staff are former Corps of Engineers officers.

Now, however, some of the juniors are beginning to come from the ranks of the Air Reserve Officers' Training Corps programs in the nation's technical schools.

Not all of the top men are civil engineers, of course. Brig Gen. C. Pratt Brown, deputy to General Washbourne, is a chemical engineering graduate of the Georgia School of Technology, though he served with the CE from 1941 through 1947. Because of the heavy responsibilities of the job, the men have been selected for their abilities as administrators, and as specialists on allied matters. General Brown, for example, wears the wings of an Air Force Command Pilot. Before assuming his present post he served in such diverse jobs as engineering officer at a sub-depot base; a member of the joint Brazil-United States Military commission; chief of the aircraft programming division; Deputy Assistant for Plans, Pro-

. . . Air Force Engineers

grams and Requirements for the Air Materiel Command.

• **Programming is problem**—Aside from its more normal engineering duties—which included last year's hotly-debated decision to use only portland cement paving for new jet runways—the biggest problem for the Installations organization is that of programming work to take care of the Air Force's needs.

How complex that problem can be, says General Washbourne, is easily illustrated.

". . . the force structure of the Air Force has everything to do with the number and character of the base facilities that are required to support it.

"There has been speculation in the press," he comments, "that the reduced wing structure now budgeted for the Air Force might have an impact upon the construction program—that the Air Force might now have fewer bases and installations than intended under the 137-wing program (123 is now the force level)—that fewer wings mean fewer bases."

• **Smaller but greater dispersal**—"The reduction from 137 to 123 wings would seem to include automatic elimination of 14 bases. But that fails to consider the SAC dispersal program.

"The SAC's 11 wings are concentrated on 11 bases. When they go to squadron dispersal, a wing will occupy three bases—thus 11 wings would require 22 additional bases. So instead of losing 14, we need to add eight. However, should we disperse a wing in this manner, it may leave some unused capacity at the former wing bases—so we may see some redeployment of the remaining units in the Air Force, and we might mix on one base elements of the strategic forces, air defense forces, tactical forces and support and training units. All of these may require modification of existing facilities."

• **And there's the missile program**—"The evolution of the missiles program has already started. New weapons and missiles will be accommodated by conversions and dispersals. We made a start on the missiles facility construction in 1954, with about 1% of the annual construction program—and in the (fiscal year) 1958 program, it will take 20% of the construction program.

"By 1961 we expect a fairly clear pattern to emerge as to the rate at which proven missiles can be accepted . . . as substitute for manned aircraft.

"But during the next five years, the Air Force is forced to support two base programs—we'll be leading one horse, and riding the other."

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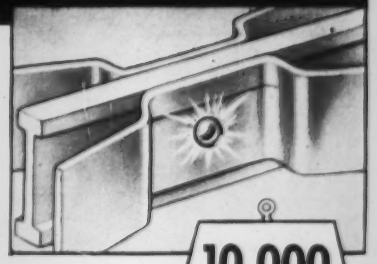

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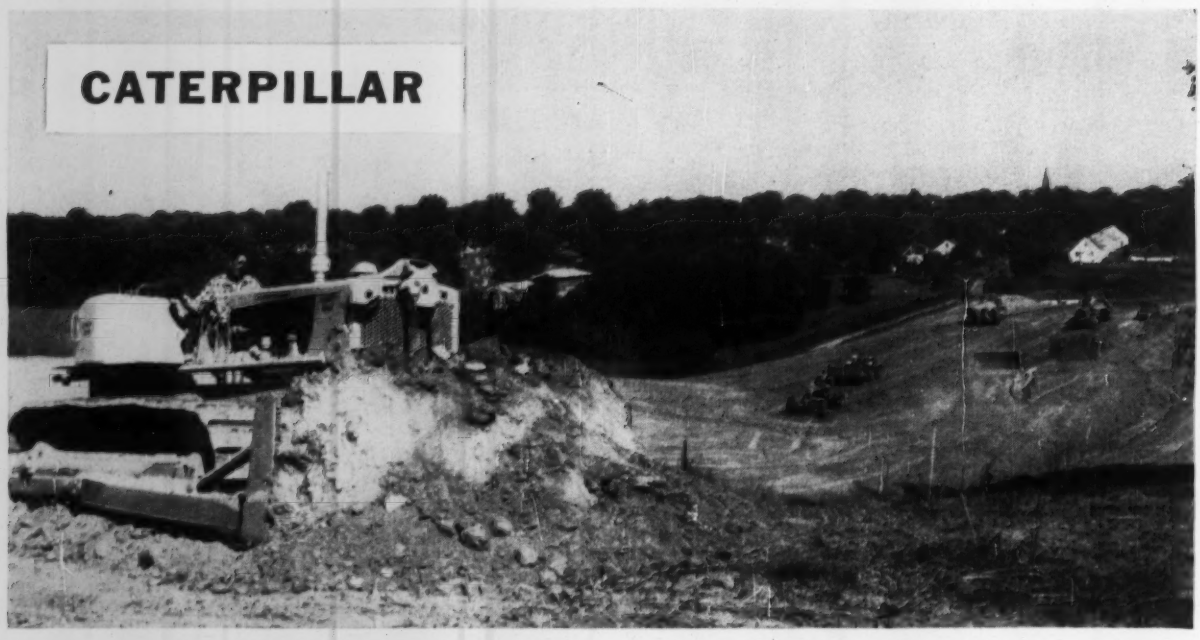

27 CATERPILLAR MACHINES are at work on the historic St. Charles job for Cameron, Joyce & Co.

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When the big yellow machines rolled into St. Charles, Mo., they signaled the start of our new $50 billion highway building program. Here's the story of that job.

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FEDERAL AID HIGHWAY ACT OF 1956
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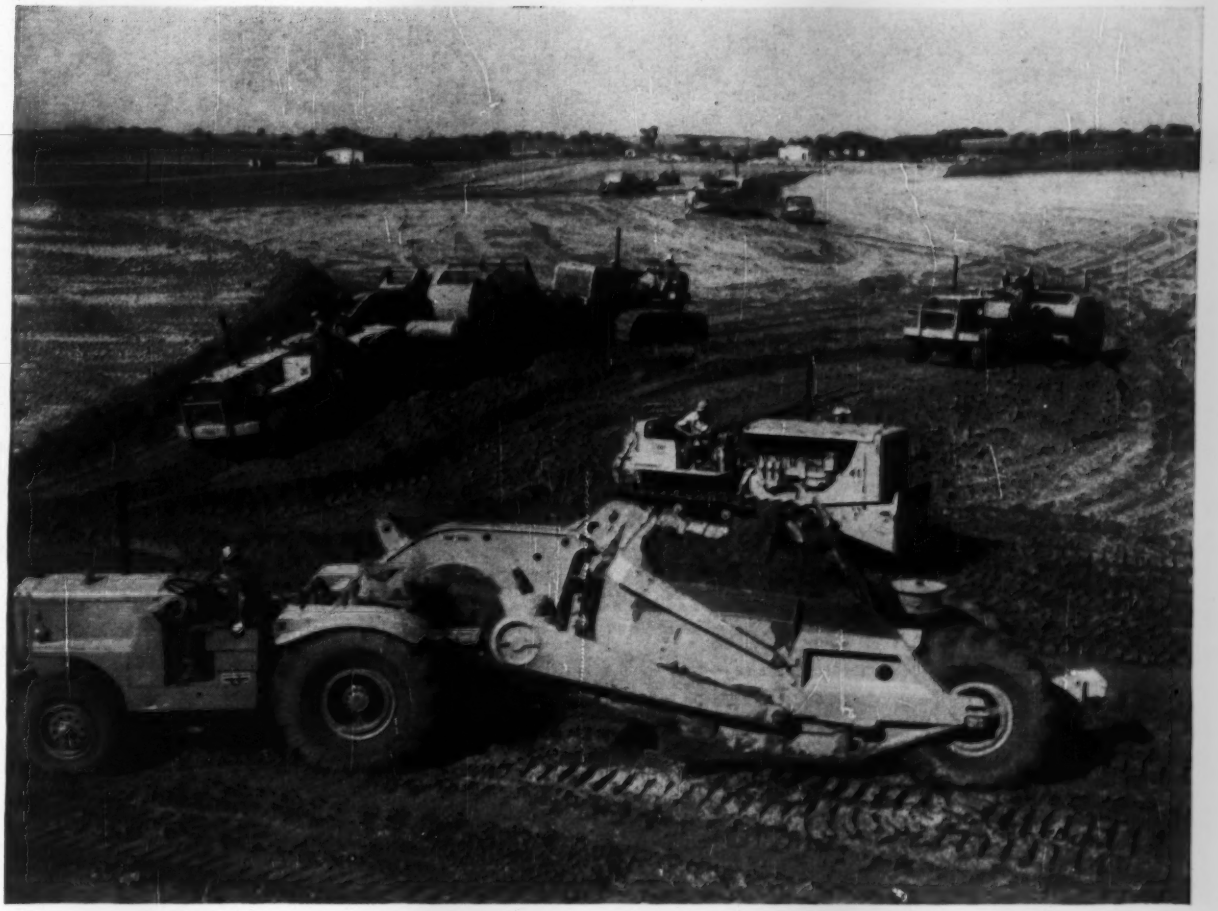
CAMERON, JOYCE & COMPANY
CONTRACTORS

There was an important bit of history enacted recently near St. Charles, Mo., when Cameron, Joyce & Co. of Keokuk, Iowa, started moving earth for a 2.8-mile stretch of four-lane highway. It was the first earth to be moved under provision of the Federal-Aid Highway Act of 1956, which has launched 50 billion dollars in highway construction in the next 14 years.

Here—as in every important road building job in our nation's recent history—a fleet of Caterpillar* machines was selected to do the work.

Cameron, Joyce will move 800,000 cubic yards, including about 27,000 yards of rock. The job includes three overpasses. The new highway, which will be part of Route 40, will bypass St. Charles, Mo., and cross the Missouri River just south of the community on a bridge now under construction. On the other side it will become part of the belt highway system that will ultimately encircle St. Louis.



800,000 CUBIC YARDS OF EARTH, which include 27,000 yards of rock, are being moved on this first Interstate System project.

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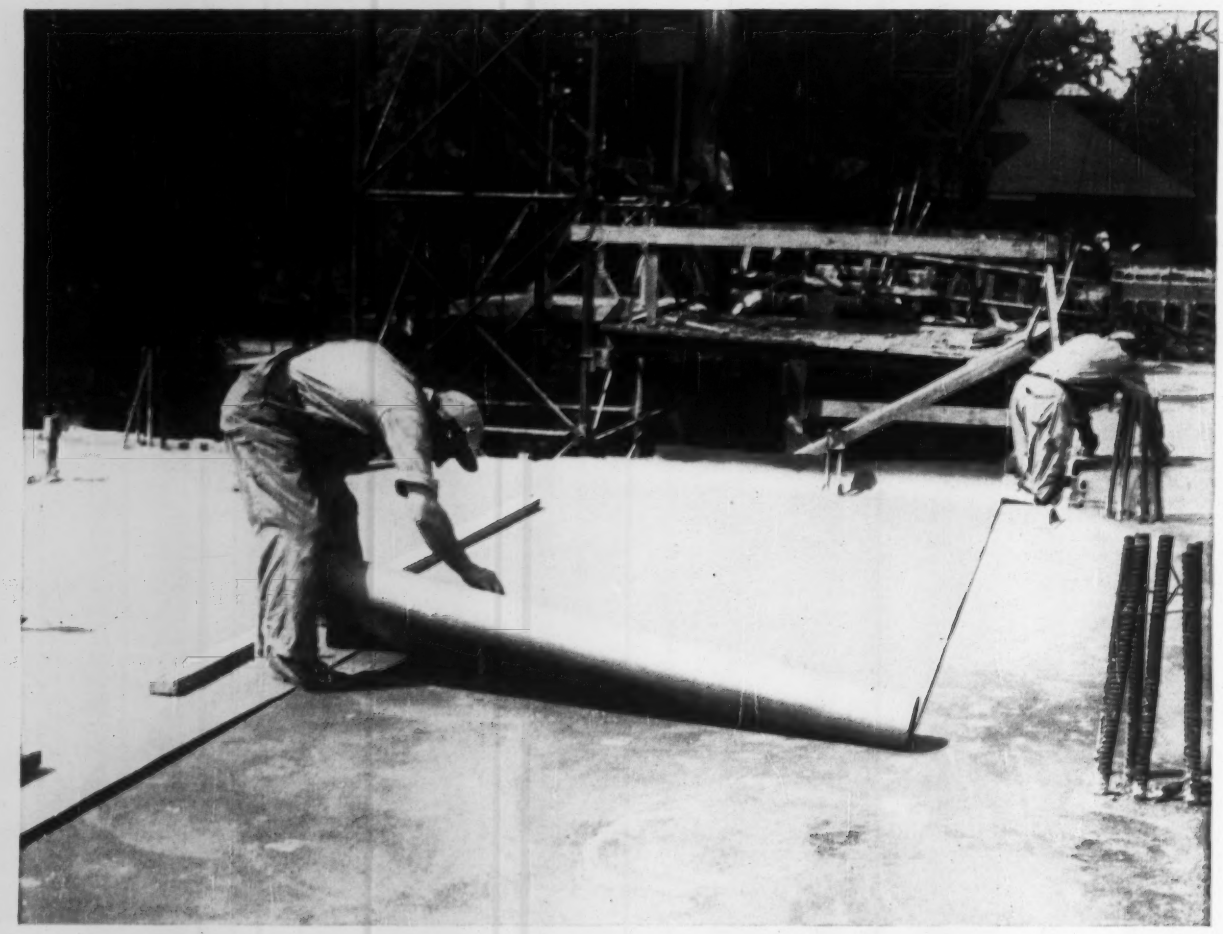

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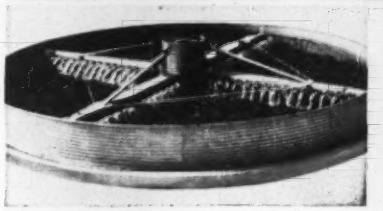

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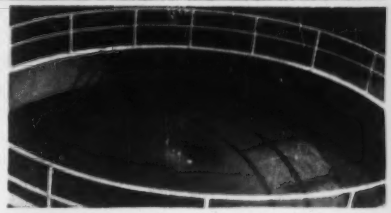

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Treatment Process for Small Plants

Already installed in six new plants, the Dorr-Oliver SpiroVortex system is offered for complete treatment of domestic sewage and intermediate treatment of industrial wastes. The newly developed complex is particularly applicable to new plants treating 1 mgd or less and is said not to require highly trained personnel for operation.

Working on the same principle as the activated sludge process, the system is said to effect over 90% BOD removal and have extremely high recirculation rates. A typical setup shown (picture) involves, from left to right, aeration in 30 ft dia superate filter, two stages of contact in twin 30 ft dia SpiroVortex or —mixing—tanks, two stages of clarification and separate sludge digestion.

Conventional practice is followed in the primary clarification and sludge digestion steps. First stage of the secondary treatment, however, is mixing of the primary clarifier overflow with secondary clarifier sludge and filter effluent in the primary SpiroVortex tank. In this tank, feed is introduced tangentially, forcing it to spiral toward the center as it is mixed. The mixture is drawn off from the central vortex, combined with part of the flow from the secondary spiral-mixing tank and pumped to the superate filter for aeration.

A high-capacity rotary distributor spreads the sewage over the shallow rock filter bed. Filter effluent is split, with controlled flows fed to each of the mixing tanks. After additional contact time in the secondary mixing tank, the liquor is removed, at the vortex, and recirculated to the filter. Recirculation rates are determined by the BOD strength of the raw sewage.

Part of the flow from the secondary mixing tank becomes treated effluent after clarification in the secondary clarifier. Underflow sludge from this unit is returned to the primary clarifier or recirculated to the primary mixing tank.

The system also is recommended for use in expansion of existing plants where it is feasible to divide the flow to the secondary stage. Dorr-Oliver, Inc., Barry Place, Stamford, Conn.

Vibratory Compactor for Use on Granular Soils

A self-contained vibratory compactor for use on granular soil, stone sub-bases, asphaltic concrete and soil cement mixtures is announced by Maginniss Power Tool Co.

Called the Powr-Pactor, the compactor provides variable vibrating frequencies from 2,400 to 7,000 VPM, with compacting forces ranging up to 4,000 lb. The manufacturer says that this variable frequency and force permits selection of the exact degree of compaction necessary to produce uniform Proctor densities on any job. It has a 12 in. by 18 in. compacting plate of ¾ in. alloy steel and the entire unit weighs 230 lb.

Power is provided by an air-cooled Wisconsin ACN engine, which is mounted on a vibration-free plate. Resilient damping springs are said to isolate vibration from the engine and the operator's handle. This assures maximum engine life without need for special components and minimizes operator fatigue, it is claimed. A V-belt driven vibrator eccentric rotates on four high speed ball bearings within a sealed housing, attached to the compacting plate.

According to the manufacturer, the compactor is designed for operating ease and efficiency. The engine throttle is located on the operator's handle and a centrifugal clutch allows the engine to idle without vibrating the compactor. The clutch also permits engine starting and warm-up with the vibrator automatically disengaged. Dolly wheels facilitate movement on the job and a lifting bail is provided for loading.

These compactors also are available with 180 cycle or standard 60 cycle electric motor drive. Maginniss Power Tool Co., 154 Distel Ave., Mansfield, Ohio.

Parsons Unveils New Wheel-Type Trenchliner

A big capacity trenchliner, the Parsons 170, has been added to its line of wheel-type trenching machines by The Parsons Co.

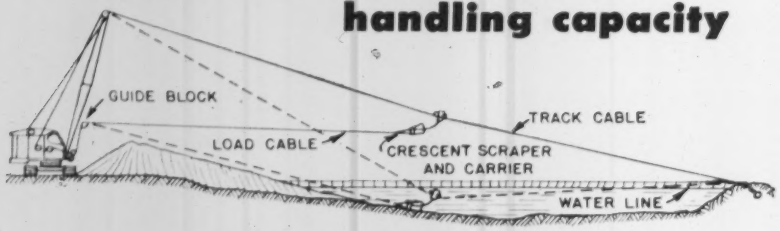
One feature is a hydraulically driven conveyor that provides belt speeds up to 600 fpm, yet works completely independent of the wheel speeds. As a result, it is possible to place spoil at a convenient distance from the trench wall when wheel speeds are slowed due to tough digging conditions. According to Parsons' engineers, it will produce from 12 in. to 25 ft of trench per minute in a range of 30 digging speeds. Maximum digging depth is 5 ft 9 in. A selection of seven cutting widths are available, extending from 20 to 32 in., in 2 in. increments.

The digging wheel is hydraulically raised and lowered on a vertical mast to hold close grade tolerances at desired digging depths. A separate mast tilt ram holds the mast vertical and tilts it forward for proper balance and clearance when traveling or loading.

Power is furnished either by a standard 60 hp gasoline or 54 hp diesel en-

the SAUERMAN METHOD...extends the reach of your crane

the CRESCENT SCRAPER...increases its handling capacity



Drawing shows crane using Crescent Scraper and carrier with a track cable. This arrangement increases effective digging range and permits gravity return to the excavation for a faster operating cycle. Maximum operating span is governed only by amount of cable that may be reeved on the drag drum.

Use This Fast, Economical Method For:

Cleaning Ponds
Trenching Streams
Sludge Removal
Cleaning Under Bridges
Building Reservoirs
Beach Construction

Any crane can handle a Crescent Scraper larger than its regular dragline bucket. Smaller units can increase their capacity about 50%. Large cranes can usually double their capacity. When the boom is supported by a strut or outrigger, a Crescent of still greater size can be used. Arrangements of this type have increased rated crane capacity as much as 4 to 1.

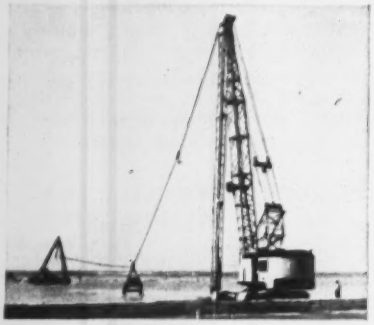
The Crescent hauls its load on the ground and the load is automatically deposited when the bucket is raised. Only the empty scraper bucket is lifted by the crane.

When a crane is equipped with a track cable, Crescent and carrier, it can reach farther, dig deeper under water or from soft areas without the nuisance of mats. Anchorage for the track cable may be fixed—or movable to provide easy shifting to a new line of operation. A tractor makes an excellent mobile anchorage.

Although the track cable method is best for increasing your machine's range, the Crescent can also be cast like your regular bucket.

Get the facts on how much the capacity of your crane can be increased. Give us the make, model and boom length. Ask for Field Report 228 and Catalog J. Catalog T tells how to use Crescents with tractors.

This Indiana contractor used the track cable method with a 1½-cu. yd. Crescent Scraper to trench across a river. After the water main was placed, the scraper backfilled the trench.



Boom support enabled this crane to use a larger Crescent. After a sub-grade of coral was placed, the 4-yd. scraper was reversed and used to grade the beach. Barge-mounted winch served as anchorage for track cable and supplied power to scraper on grading operations.

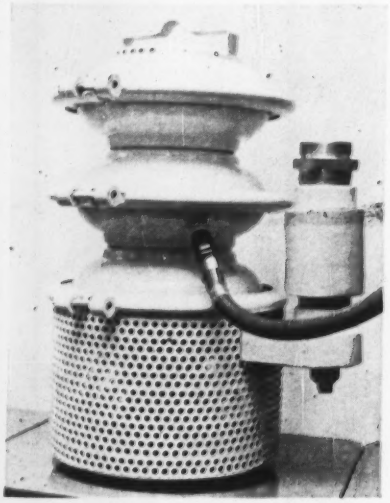
Important to Users of Blocks and Fittings: Get the new Sauerman bulletins showing the complete line of Wire Rope Fittings and Durolite Sheaves available from stock. Ask for Bulletins 164 and 165.

SAUERMAN BROS., INC. 632 SO. 28th AVE. BELLWOOD, ILL.

Crescent Scrapers • Slackline and Tautline Cableways • Durolite Blocks

gine. Tractor type crawlers with replaceable links, pins and bushings can be standard 16 in. grouser type or 12 in. flat shoe type.

Other features in the trenchliner design include an all-welded steel frame, a dual purpose friction type clutch and oil bath lubricated gears with sealed shafts mounted on antifriction bearings. PARSONS CO., NEWTON, IOWA.



Diaphragm-Type Pump Good for High Head Work

The Layton Co.'s latest diaphragm-type pneumatic pump for high head pumping is said to operate with a head of 100 ft or more. It is claimed to be fire-proof, explosion-proof and odorless in operation.

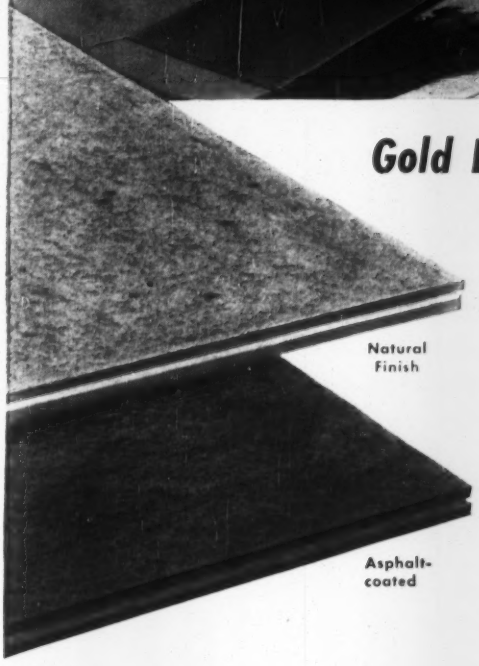
The pump reportedly ejects fluids with 60% solids and highly abrasive liquids. There is no contact with any working parts. The pump is 22 in. high, 12 in. in diameter and weighs 65 lb. It is recommended as a sump pump for tunnel work, deep shaft work and also in shallow trench. LAYTON CO., INC., 4749 S. WHITNALL AVE., CUDAHY, WIS.

Two-Stage Crusher Made For Medium-Hard Material

A two-stage crusher has been developed to receive run-of-mine product or direct open pit feed and reduce it to as small as ½ in. size. Said to provide a greater ratio of reduction than previously available in a single crusher, this unit is recommended for coal and materials of similar crushability.

The crusher is composed of two elements—an 18 in. dia single roll crushing primary feed against a curved crushing plate, and two 18 in. dia rolls performing the secondary reduction. The de-

This plant gets roof insulation value that stays!



Gold Bond Insulation Roof Board safeguards your roof specifications, too!

Townsends, Inc., raises broiler chickens in Millsboro, Del. — 1,000,000 at a time! They used Gold Bond Insulation Roof Board when they expanded their plant. Here's why:

1. Roof insulation value gets maximum protection because Gold Bond Insulation Roof Board resists compression from workmen's feet and wheelbarrows during construction . . . and cuts "soak-in" of hot pitch or asphalt to a minimum.

2. Roofs cost less to build because Gold Bond's smooth surface lets workmen mop faster and more easily—and get maximum coverage. Gold Bond's unique "Fiberlok" fabricating process makes this insulation roof board strong, rigid, easy to handle and long-lasting.

3. Gold Bond Insulation Roof Board is moisture-resistant because the fibers are treated with water-resistant rosin or asphalt. Available with full asphalt coating for still more moisture-protection if needed. You can specify square, shiplap or offset edges . . . thicknesses to meet any specified "C" value.

For further information, call your Gold Bond® representative or write National Gypsum Company, Dept. EN-57, Buffalo 2, New York.

INSULATION ROOF BOARD

NATIONAL GYPSUM COMPANY

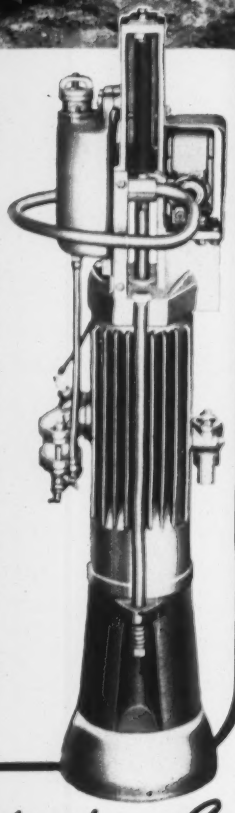
Gold Bond
BUILDING PRODUCTS

GASOLINE BARCO RAMMER

Barco Performance Pays Dividends!

Job Finished on Time!—When project specifications call for SOIL COMPACTION, Barco performance can't be beat! In test after test, Barco Rammers have demonstrated their ability to deliver 95% to 97.5% compaction (modified Proctor Method)—RAPIDLY! EFFICIENTLY! ECONOMICALLY! The Barco Rammer is especially effective for compacting fill in restricted areas—close to walls, culverts, abutments, around footings, and in trenches—on all kinds of construction jobs: Atomic Energy, Air Bases, Hydroelectric Power and Flood Control Dams, Highways, Toll Roads and Freeways, Bridges, Buildings, and Housing Developments. On area tamping, one man can average 20 to 30 cubic yards of fill per hour. On trench backfill, using lifts up to 24", the rate for 18" trench is 360 to 600 feet per hour.

Ask for a Demonstration—We will be glad to arrange a demonstration for you; see our nearest distributor or write. SEND FOR A COPY OF CATALOG 621.



BARCO *Manufacturing Co.*

514-F Hough Street • Barrington, Illinois

sign is said to produce a better product with fewer fines than two-stage crushers using two rolls for primary crushing.

A hydraulic system positions the secondary crushing rolls to any desired opening up to six inches, with roll openings indicated by gage. The system makes accurate changes within minutes, even while crushing. An adjustable relief valve in the hydraulic system protects against damage to the secondary crushing system from uncrushable materials. The primary system is protected from tramp iron damage by breaking blocks.

Other features are the two-stage crushing with only a single power unit, low head room and small space requirements. The unit is made in four sizes—18 in. roll dia by 24 in. roll width, 18 in. by 36 in., 18 in. by 48 in. and 18 in. by 60 in. McLanahan & Stone Corp., Hollidaysburg, Pa.

Vertical Shaft Generator Is Compact and Portable

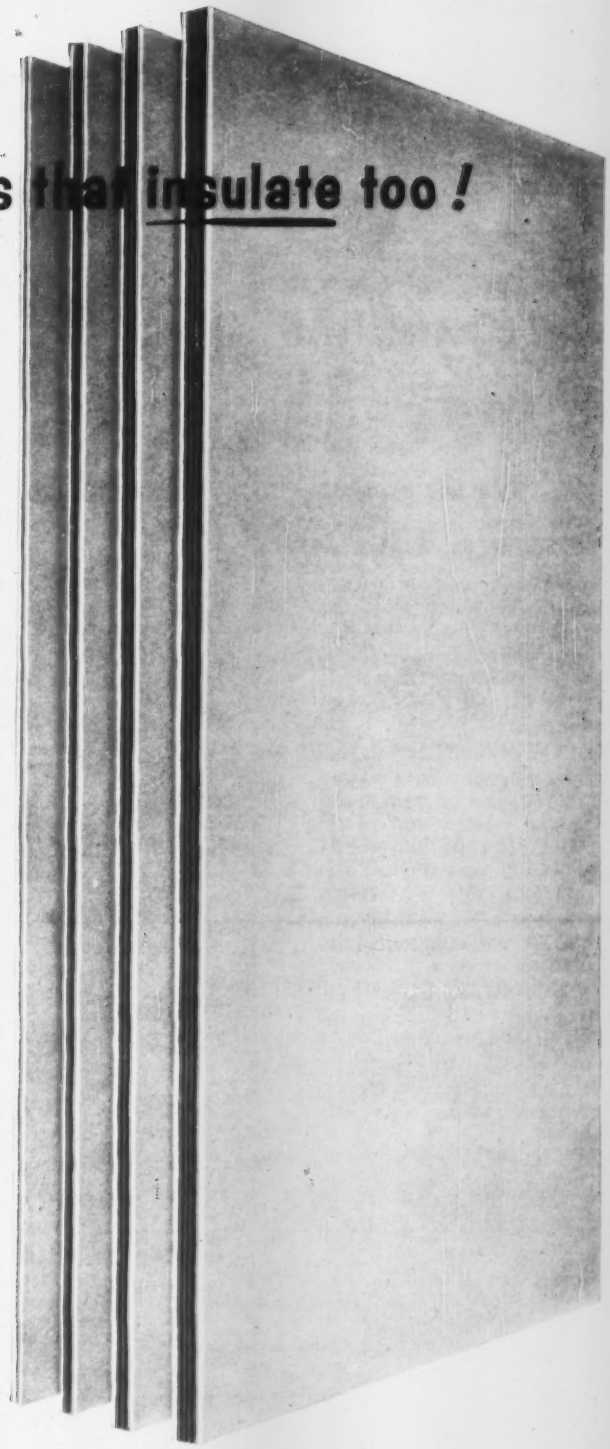
A vertical shaft design used on two new 1,500 w electric generators is said to improve the portability and extend the service life of such machines. With the vertical shaft, weight loads normally imposed on the main bearing shaft are shifted to the supporting tubular framework. A longer service life can be expected since the engine main bearing and shaft only turn the armature and do not have to support it also.

A shock mounting isolates the rotating armature and engine vibration from the frame, which also serves as a protective guard and carrying handle.

Two models—EG-1.5 A for alternating and EG-1.5 D for direct current—are powered by gasoline engines and provide 13 amp, 115 v current for power tools used on construction sites.

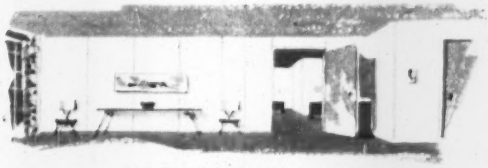
The generators weigh 95 lb, are 23½ in. high and 23 in. in diameter. Two

ASBESTONE PANELS...
versatile curtain walls that insulate too!

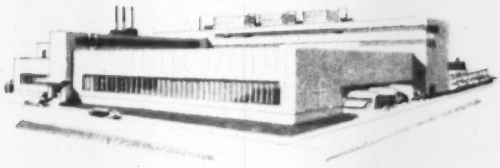


Gold Bond ASBESTONE PANELS bring to the building industry one of the simplest, most economical curtain wall methods ever introduced. In addition to easy handling, ASBESTONE PANELS provide the durability and permanency of ageless stone.

ASBESTONE PANELS are made of 2 Asbestos-Cement sheets, laminated to both sides of an asphalt-impregnated, chemically-treated insulation core. This process provides the added advantages of resistance to weather, moisture and fire, plus built-in insulation. Four feet wide, ASBESTONE PANELS are available in 6′, 7′, 8′, 9′, 10′ and 12′ lengths in four thicknesses. There's a size for every building recommendation.



MOVABLE OFFICE WALLS



EXTERIOR CURTAIN WALLS

Whether you're planning panelized curtain walls for factories, schools, hospitals; for inside or outside use; Gold Bond ASBESTONE PANELS offer you maximum flexibility, strength and economy.

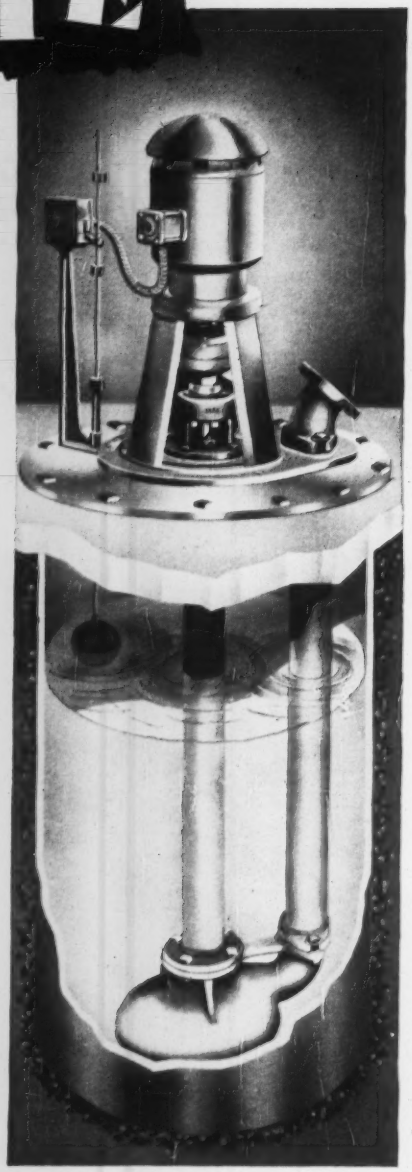
There's complete information on Gold Bond® ASBESTONE PANELS in our new manual. For your copy, write to National Gypsum Company, Dept. EN-57, Buffalo 2, New York.

ASBESTONE PANELS

NATIONAL GYPSUM COMPANY

Gold Bond
BUILDING PRODUCTS

Pump Liquid WASTE with the weil Heavy duty Sewage Ejector



The Weil screenless sewage ejector with the NON-CLOG impeller effectively handles large diameter solids, rags and stringy material of various lengths which are washed into the sewage pit.

RUGGEDLY BUILT: This factory assembled unit has an ample reserve of strength to meet the most severe conditions and furnish years of trouble free operation.

SIMPLIFIED PIPING: Only one piping connection required. An economical installation.

The **NON-CLOG** Impeller (illustrated below) built into the WEIL Screenless Sewage Pump supplies the ideal method of pumping sewage and unscreened liquids containing solids.

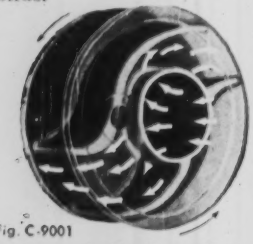


Fig. C-9001

Successfully handles the tough jobs where other pumps fail.

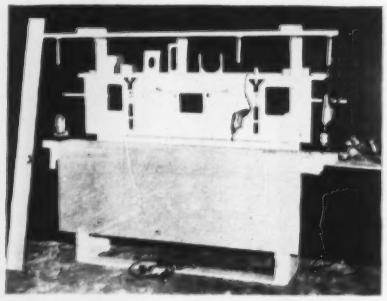
Send for Bulletin C-900 E. Weil Representatives and Weil Engineers are available to help solve your waste pumping problems.

See Catalog in 1957 Sweet's and 1957 Domestic Eng. Cat. Dir.

weil PUMP CO.

1528 No. Fremont St. Chicago 22, Illinois

plug-in outlets are provided, and any number of tools or lights with a total power requirement up to 1,500 w can be used simultaneously. THOR POWER TOOL CO., 181 N. STATE ST., AURORA, ILL.



Jig Speeds Installation Of Door Hinges and Lock

A Texas contractor is now manufacturing a portable door-hanging device that he says reduces to 10 minutes the time required to drill and rout for all the hardware required for a door and its jambs.

Called the Door Crafter, the wood-frame unit has three main parts: a bench, which holds the door fast with either the lock edge or the hinge edge up; a hinged templet, which lowers over the upturned edge of the door; and an overhead track, which facilitates movement and handling of power tools. Detail templets are provided in the form of rectangular inserts that fit into corresponding rectangular openings in the hinged templet.

The Door Crafter is priced at $185 f.o.b. Kerrville, Tex. It is shipped partly assembled. Two men can complete the assembly in an hour, according to the manufacturer. EARL E. STEEL, 129 W. WATER ST., KERRVILLE, TEX.

Hinge-Top Wireway Opens For Easy Lay-in Wiring

A hinge-covered wireway opening over the length of the run allows lay-in wiring and eliminates the usual method of threading conductors through collars. Standardized fittings permit the wireway to be tailored to the contours of any building.

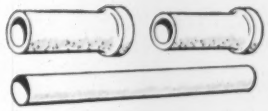
General Electric's type HW wireway comes in lengths from 1 to 5 ft and in 4 x 4 in., 6 x 6 in. and 8 x 8 in. sizes.

A hook and slot arrangement speeds assembly of the sections and fittings. To meet changing load requirements, additional conductors can be laid in or existing wiring can be altered without extensive labor the manufacturer claims. GENERAL ELECTRIC CO., PLAINVILLE, CONN.

City officials, engineers, contractors will be interested in these . . .

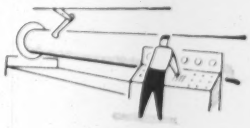
Facts About Steel Water Pipe

COMPARE THE COSTS . . .



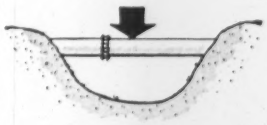
This scale drawing compares a single 40-ft length of steel pipe with two 16-ft lengths of rigid-walled pipe of the same inside diameter. The steel pipe has thinner walls and a smaller outside diameter; weighs only about one-fifth as much per ft of length. Results: the steel pipe costs less to ship and handle; requires a smaller ditch, fewer bell holes, fewer joints—only 132 per mile.

TESTED FOR STRENGTH . . .



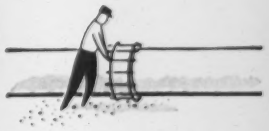
Every length of steel pipe is hydrostatically tested at the shop in accordance with AWWA specifications—usually to double the working pressure. What's more, steel pipe can withstand from 3 to 4 times the working pressure before bursting! It safely resists water-hammer, shock loadings and surge.

BEAM STRENGTH . . . Steel pipe has the structural strength that is characteristic of tubular steel. It can span long washouts; is often handled in multiple lengths during installation. And steel pipe can stand up under the weight of extremely heavy cover.



RESILIENCE . . . Steel "gives" under stresses that would cause more rigid materials to crack or break. Steel pipe can "absorb" traffic vibration as well as shock due to explosions and earth tremors. Its resilience allows it to transmit much of the strain to the surrounding earth. This is not true of rigid-walled pipe.

LEAKPROOF JOINTS . . .



100 pct bottle-tight joints are a practical reality with steel pipe, whether Dresser couplings or welds are used. Water leakage is prevented; there's no contamination of the contents due to infiltration from without. These joints are quickly made, they're permanent, and they're strong.

CORROSION-RESIRTANCE

Modern methods of lining steel pipe with hot-spun coal-tar enamel make it immune to corrosion and incrustation. There is no known time limit to this protection. Many tar-enameled lines have been in service for upwards of fifty years. Coal-tar enamel provides the smoothest surface obtainable, assuring high flow coefficients year after year. Coatings and wrappings protect the pipe exterior from moisture, acids and alkalis.

WIDELY USED . . . Large-diameter steel pipe is the growing choice of planners of municipal and industrial water systems. Some recent users of Bethlehem Steel Pipe are: New York City, New Orleans, Philadelphia, Savannah, Reading, Cincinnati, Atlanta, Omaha, Worcester, Colorado Springs and Boston. Further proof of the superior qualities of steel pipe is its use in thousands of miles of large-diameter gas and oil lines, as well as in high-pressure penstocks throughout the world.

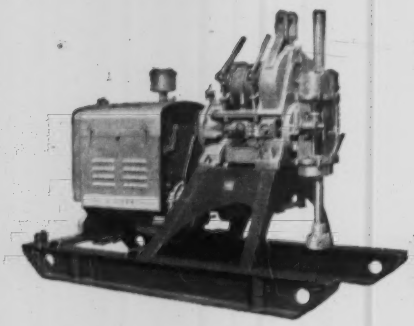
If you would like to have further information about steel water pipe, kindly call or write to the Bethlehem sales office nearest you.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. *Export Distributor:* Bethlehem Steel Export Corporation

BETHLEHEM STEEL

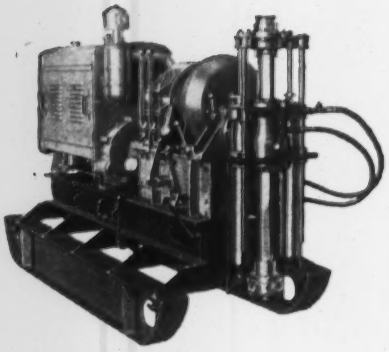
WE HAVE A CORE DRILL MACHINE



THAT WILL MEET YOUR NEEDS

UP TO 3000 FEET DEEP*

**Depending Upon Size Core Required.*



Yes . . . if you need a small one or a heavy one we have just the core drill machine for you. Manufactured by us and used in our own contract drilling department they are made to operate efficiently under the most difficult conditions, giving you the utmost in performance. Write today, giving full details and a descriptive folder on the proper size will be sent. (Skid mounted, trailer mounted, truck mounted.)

SPRAGUE & HENWOOD, Inc.
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Publications

Nailing jamb assemblies—The effectiveness of nailing jamb assemblies of wood window frames with the Auto-Nailer, an automatic nailing machine that can produce and drive as many as three 2¾x 0.091-in. auto nails per second, has been investigated by the Wood Research Laboratory at Virginia Polytechnic Institute. The findings, which are reported in a 20 page bulletin, suggest the use of an equal number of auto nails instead of the required box or casing nails. This results in a jamb assembly strength twice that given by conventional nailing. The report also recommends revision of the commercial standards to include auto-nailed jamb assemblies. VIRGINIA POLYTECHNIC INSTITUTE, WOOD RESEARCH LABORATORY, BLACKSBURG, VA.

Masonry saws—A 1957 price booklet (1032) has been issued by Clipper Manufacturing Co. The booklet lists all Clipper products, including the new 2 hp saw with Hi-Lo Control Wheel and Sta-Level Cutting head. Other products covered include the Select-A-Notch Masonry Saw, concrete saws, diamond, break-resistant and abrasive blades, and also joint sealers. Details of a mixed specification savings plan on all types of blades are included. CLIPPER MANUFACTURING CO., 2800 WARWICK, KANSAS CITY 8, MO.

Asphalt pavers—A booklet describing the Rola Paver, trenchers and base boxes has been prepared for distribution to contractors, municipalities, county and state governments. Illustrations show how the exclusive full floating screed eliminates wheel and shoe marks and 90% of the raking. The standard boxes as well as the combination boxes are covered. Operating instructions and a parts list are included in the booklet as is a price list for pavers and parts. CREATIVE METALS CORP., 1290 POWELL ST., EMERYVILLE, CALIF.

Off-highway trucks—An illustrated folder describing the two models of the Payhauler, an off-highway truck, now is available. The new pamphlet points out that the 24 ton "95" and the 18 ton "65" are designed to match the demands of users in regard to capacity, speed and dependability. On-the-job reports and numerous photos of the units on road, quarrying and mining operations are included. The last page offers a quick reference to brief specifications of the two machines. BOOKLET CR-592-G, INTERNATIONAL HARVESTER CO., CONSTRUCTION EQUIPMENT DIV., 180 N. MICHIGAN AVE., CHICAGO 1, ILL.

HOW TO HANDLE WET JOBS

#38 of a Series

Project: Power Plant, Managua, Nicaragua
General Contractor: The H. K. Ferguson Company
Pumping Contractor: WELLPOINT DEWATERING CORP., NEW YORK

Wellpoints travel to remote Nicaragua to . . .

Control 32 ft of Water in Volcanic Soil

This was a job located, inaccessibly, in remote Nicaragua. Much of the equipment had to come via long overseas journey to the coast—then be hauled by narrow-gauge railroad to the work-site.

• **Wrestling with these** knotty problems of supply, H. K. Ferguson Co. required dependable performance in all respects. Efficient dewatering helped, as follows:

First, the wellpoint system (by Griffin) successfully dried the stubborn volcanic soil. 40,000 cu yds were then removed and much of this material was used to build the dike shown in photo (no sheeting needed here, excavation open cut).

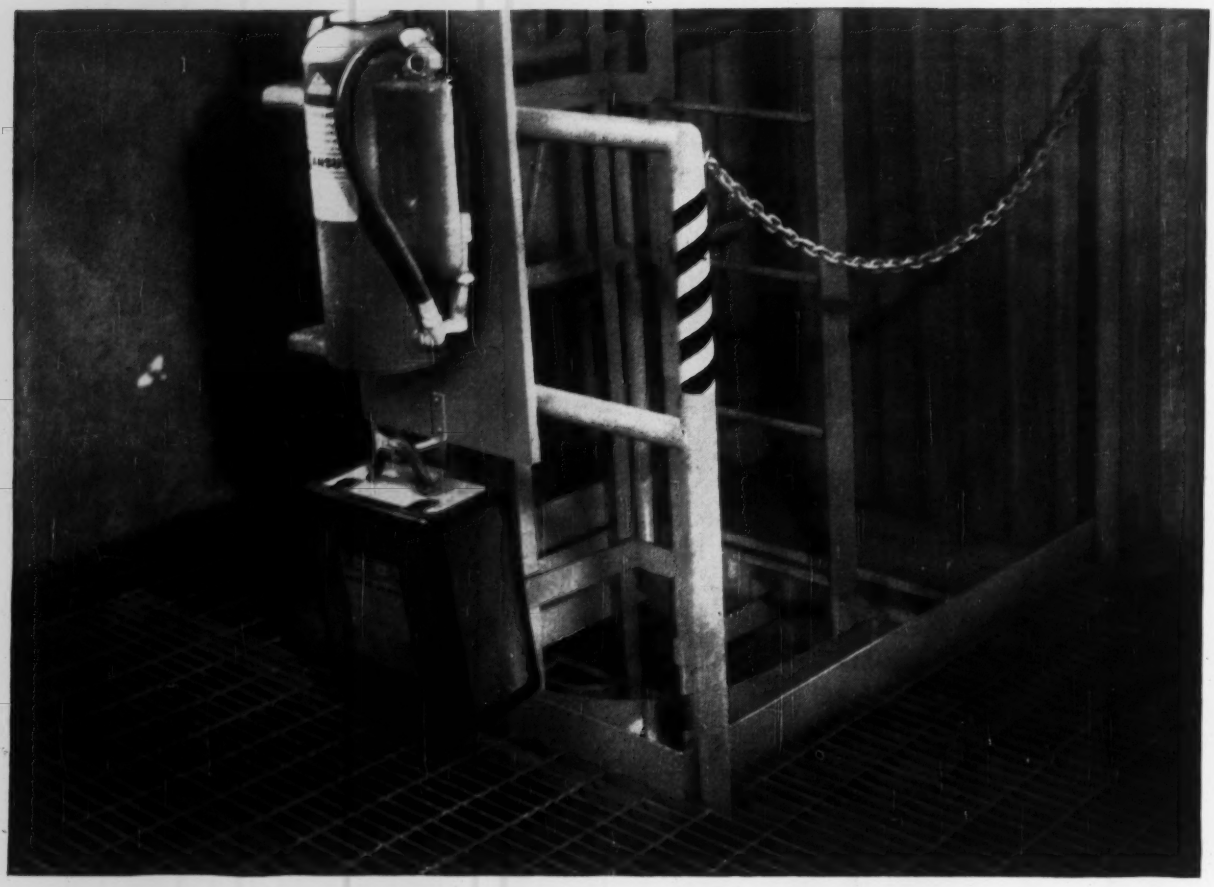
• **Dike protected** work-area from the waves of wind-swept Lake Managua as construction went ahead on schedule. Griffin wellpoints travel everywhere, save trouble every time.

GRIFFIN WELLPOINT CORP.

DEWATERING • SOIL STABILIZATION • JETTING

MAIN OFFICE: 881 East 141st Street, New York 54, N. Y.

Jacksonville, Fla.: 2016 E. Adams St. • Hammond, Ind.: 548 Indiana St. • Houston, Tex.: 6100 Harvey Wilson Drive
In Canada: Construction Equipment Co., Ltd. • Toronto, Montreal, Halifax, Edmonton



A dangerous place to work...

that's why you see so many symbols of safety

Here's a plant that's out to keep "employee downtime" at a minimum. Extinguishers and gas masks provide protection against fire and toxic fumes. Guard rails and chains surround permanent hazards. Raised steel strips around floor openings prevent objects rolling or being kicked to the floor below. Clean windows and bright lighting provide good visibility. It's only natural that a company so interested in safety should select Blaw-Knox Electroforged® Steel Grating for "underfoot" safety.

Each section of Blaw-Knox Steel Grating is of rigid, one-piece construction. Choice of cross bar and bearing bar designs and spacings affords maximum safety under all working conditions. Indoors or out, you get safe, quiet, long lasting and self-cleaning flooring with maximum passage of light and air.

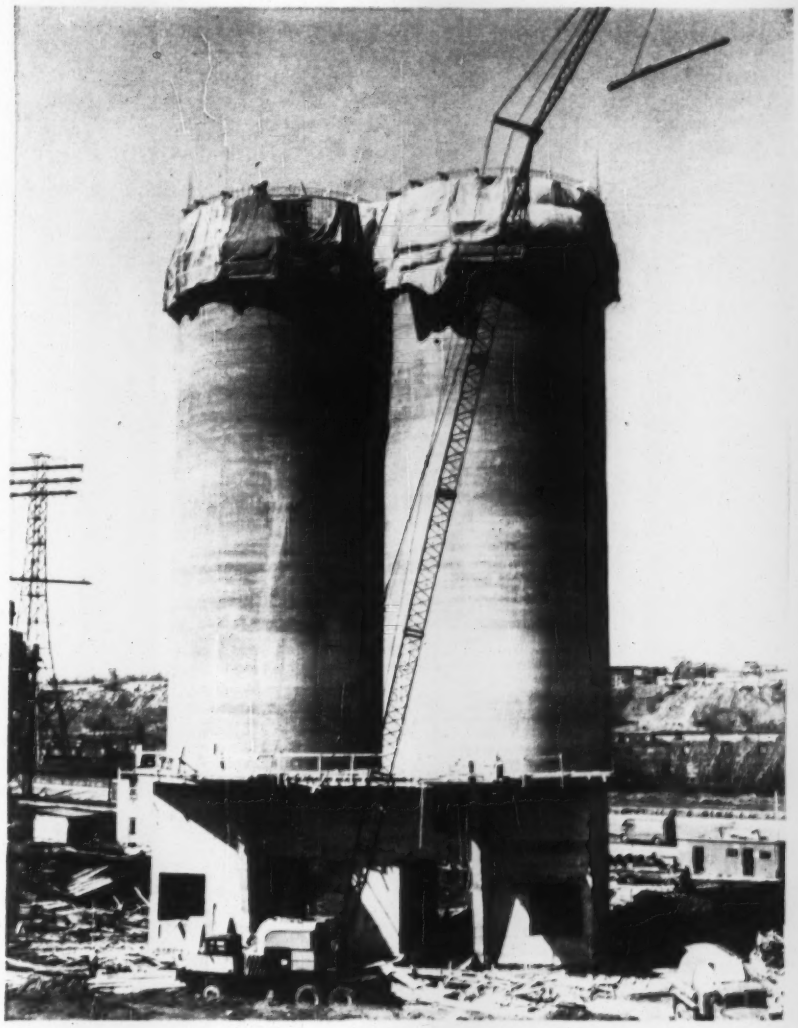
Blaw-Knox Electroforged Steel Grating is fabricated in a wide selection of materials to exact customer specifications. Fits easily and neatly into even the most congested areas.

Send for new Blaw-Knox Grating Catalog 2527. See new ideas in flooring, walkways, stair treads, platforms, shelving. Write today.

BLAW-KNOX

BLAW-KNOX COMPANY

Blaw-Knox Equipment Division • Dept. A, Pittsburgh 38, Pa.



Jacks Raise Formwork for Tall Silos

Continuous placing of concrete was facilitated in construction of the tallest cement-storage silos ever built in Canada by the use of a hydraulic jack system that raised the 4 ft high, circular sliding forms after each previously concreted section has hardened. The hydraulic jacks were connected to a central pump and controlled by push-button. Only one operator was required, instead of the large crew necessary with manual jacks.

Placement of concrete continued for 9 days and 8 nights, averaging about 14 ft a day until the 151 ft high structures were complete.

The twin silos, located in Ville La Salle, along the Lachine Canal near Montreal, have a diameter of 36 ft and a wall thickness of 12 in. The storage compartments are 121 ft high and have a common base of 30 ft height.

Some 142 tons of reinforcing steel was used. Horizontal bars range from 1¼ in diameter at the top to double layers of up to 5 in. dia bars at the bottom. Because of high inside pressures 5,000 psi concrete was specified for the walls.

The ¾ in. plywood work platform topping the sliding forms will form the roof of the silo. The platform will be insulated, covered with roofing material and attached to the silos by four bolts embedded in the concrete during placing of the last section.

Cost of the silos will be about $1 million. The plant will be equipped

Do You Have This PIPE PROTECTION PROBLEM?

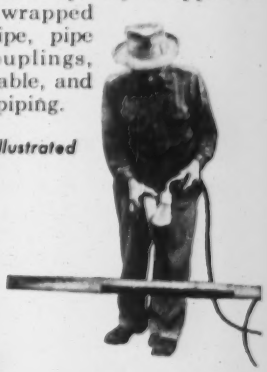
Underground piping must be protected against destructive forces of corrosive soils and electrolytic conditions. Normally, coal tar coating as called for in AWWA specifications C-203 and C-204 would be hot-applied at a coating mill. However, there are times when the volume of pipe involved or the distance of a coating mill make this impractical from a time and cost standpoint.

You'll find the ANSWER with TAPECOAT® . . . the Quality Coal Tar Coating in Tape Form

TAPECOAT is the widely-accepted alternate material that is equivalent to mill-applied hot coal tar protection. With this easy-to-use material, protection can be applied in the field by your own men, because technical know-how, kettles and special crews are not required. You save time and money while providing the long-life protection called for.

TAPECOAT is easily applied, using a torch to soften or bleed the pitch which gives both bond and protection. Available in widths from 2" to 24", it is spirally wrapped or cigarette wrapped around pipe, pipe joints, couplings, conduit, cable, and insulated piping.

Write for illustrated brochure.



The TAPECOAT® *Company*

Originators of Coal Tar Coating in Tape Form

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COMMENT
from the
BUTLER ENGINEER

Of Expansion and
The Sensational TX-4

You know, in a manner of speaking we are operating a store here at Butler Bin.

We don't have merchandise on shelves but our stock in trade is engineering knowledge and long, long experience. Try dealing with our store. I think the quality will become evident.

Incidentally we've expanded the floor space in our engineering store so we're ready. We've greatly enlarged the fabricating area . . . and for good measure we're putting in a new and larger scale department.

Just by the way of evidence of the fantastic growth in the Ready Mix industry we're designing a Ready Mix Plant that will be completely and automatically controlled by TWO punched card batchers. Who could have dreamed of such production—say ten—no even five years ago.

One gets wondering where all the incredible volume of concrete goes. But stop and think. Sure, there's a lot of big building construction—and the highway program eats up concrete with a ravenous appetite. But how do you account for the enormous number of Ready Mix Plants even in very small communities. That, gentlemen, is where a perfectly huge volume goes. It's the home-owner who decides to put in a concrete driveway . . . a walk to his front door . . . the new subdivisions.

Ask yourself how much concrete you have in your own yard. OK? Now multiply that by millions!

Ask us — if you're a Roadbuilder — about the new Butler automatic TX-4 Roadbuilder's Plant. Built to handle 1, 2, 3 or 4 dual drum pavers. All one man operated.

Best regards —

The Butler Engineer

BUTLER BIN COMPANY
WAUKESHA, WISCONSIN

with a direct pressure-pipe conveyor system for unloading cement delivered by either rail or ship. Facilities for direct tank truck loading and bagging will be installed at the base of the silos.

Owner and designer of the new packing plant is St. Lawrence Cement Co. General contractor is Magil Construction, Ltd., Montreal.

Concrete-Block Quay

Structure on the Congo River is record height

A 72 ft high, concrete-block deep-water quay in the Belgian Congo sets a world's height record for a structure of its type. The 1,968 ft long solid wall—running about 18 ft in thickness—enlarges Matadi Harbor, 85 miles up the Congo River, a key port handling 50% of Congo trade.

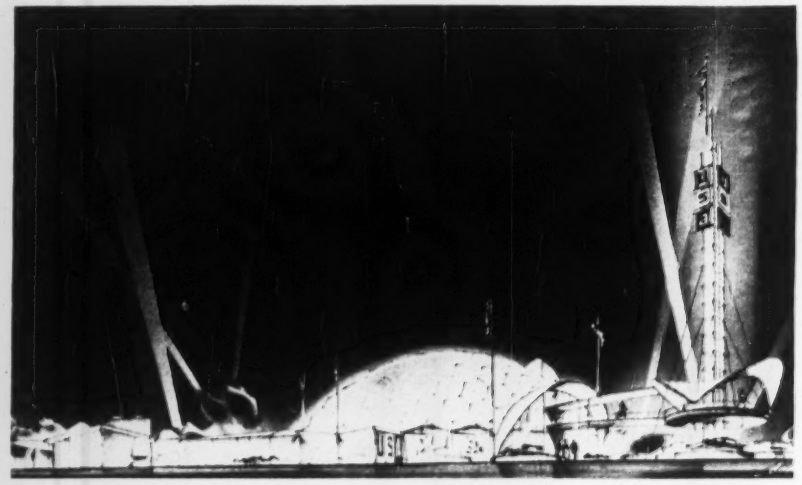
The record height is needed to provide for a river level variation of 26 ft, and is reached by stacking 1,347 precast concrete blocks of approximately 100 tons each. These are topped by a superstructure containing some 10,000 cu yd of concrete. The solid type of construction was chosen, instead of a driven-pile system used for a nearby quay, to take advantage of the excellent rock foundation and to cut maintenance costs.

First step was to dredge a bed for the concrete structure—material removed by bucket dredge amounted to about 52,000 cu yd. Next, a layer of crushed rock was fed down through pipes piercing the bottom of a supply barge and spread by divers working at the pipe outlets. Current in the river is so swift that cages were used to keep the divers from being swept away.

The various size blocks were placed by floating crane. After several setbacks, placement time averaged 15 minutes to a block. The blocks were cast close to the quarry site some distance away from the quay and transported by barge for stacking in the harbor yards. Production at the casting yard was 8 to 10 blocks a day.

Final step was placing of fill behind the concrete wall whose river face is nearly vertical (on a 1/20 batter). A section through the quay shows sand against the concrete wall. Over this is a layer of riprap sloping from the top of the wall down to bedrock. Then sand fill covers the riprap to the level of the top of the quay.

Going out into the river for more port space was necessary because of the nature of the harbor site. The city is built on rock descending toward the harbor and leaving very little room for port activities. Contractors for the job were the Societe de Constructions et Entreprises Industrielles of Brussels and the Societe Anonyme Hersent of Paris.



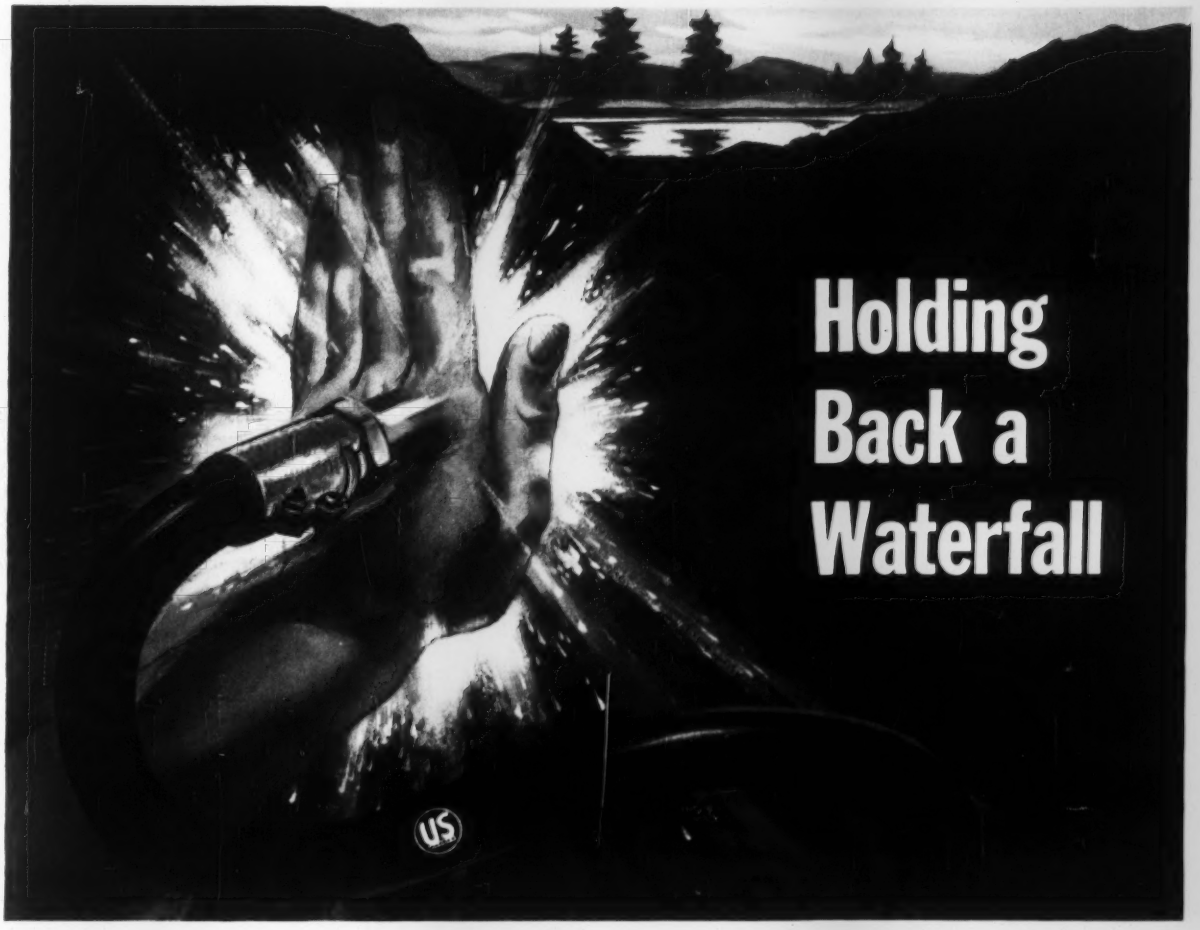
Dome to Mark U. S. Exhibit at Polish Fair

A plastic-enclosed aluminum dome 124 ft in diameter will be the outstanding feature of the U. S. exhibit at the Poznan (Poland) International Trade Fair in June. Built of tubular aluminum space frames, the structure will be bolted together and covered with translucent plastic.

Also on the one-acre site of the U. S. exhibit will be a 100 ft tower of metal scaffolding and a brick-veneer American dwelling.

Remo Aarmo, New York architect, designed the exhibit and will also serve as its coordinator. Geodesics, Inc., of Raleigh, N. C., will furnish the dome.

US RUBBER GROUTING HOSE



U. S. RUBBER PRODUCTS AT WORK ON THE 44-MILE WEST DELAWARE TUNNEL

What do you do when you're building a tunnel 320 feet below ground and, without warning, a cascade of 2000 gallons of water per minute pours down from the roof? That's what happened recently in the construction of the 44-mile addition to the world's largest tunnel system—the Delaware Aqueduct, supplying water to New York City.

When this unwelcome waterfall began, all work had to stop. In addition, the flow could not be sealed by the usual methods. So quick-thinking engineers decided to put a 40-foot concrete plug into the tunnel itself, and place the grout through the plug and into the roof. A single length of U. S. Grouting Hose, on hand from previous grouting jobs, delivered all the grout needed to hold back the waterfall.

On the eighth day, the waterfall was stopped and time and work schedules were resumed. The U. S. Grouting Hose, *as good as ever*, had delivered 16,000 bags of grout under 1000 pounds per square inch pressure, and had withstood the sudden surges, the heavy blows, and the incessant gouging of this emergency operation.

This is just one more example of how U. S. Rubber Hose is engineered for top performance under normal—and emergency—conditions. This special report about United States Rubber on the West Delaware Tunnel continues on the following pages.

US RUBBER

Mechanical Goods Division

United States Rubber

IN MUCK . . .

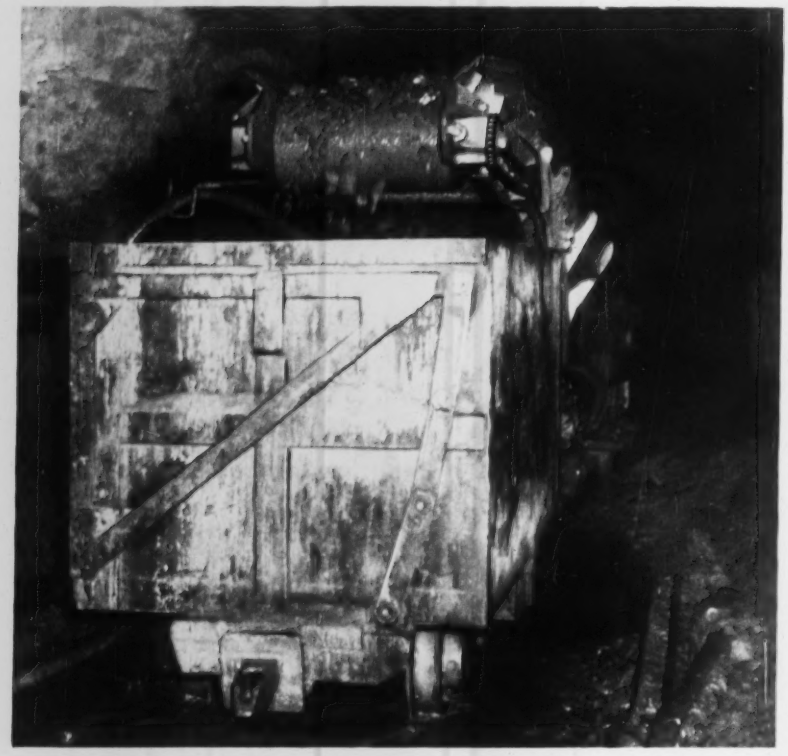
U. S. RUBBER PRODUCTS AT WORK ON

They are moving ahead at the rate of about 300 feet per day from the shaft headings and the West inlet heading of what will be the second largest tunnel job in the world—the 44-mile West Delaware extension of New York City's water supply system. The tunnel has a rough bore of 14 feet. When completed—in 1960—it will be finished to 11 feet 4 inches with its concrete lining.

Tunnel Progress

On the whole, the Cannonsville (N.Y.) end—the West end—of the tunnel is on schedule. Three shafts have been sunk to grade, turned horizontally, and about 8 miles of tunnel have already been dug from the three shafts and West inlet. These headings—five in all—are worked by 6-drill jumbo rigs cutting a 48-hole pattern into solid granite-shale and sandstone. Once the drill holes have been made and the charges have been detonated, mucking machines—equipped with U. S. Rubber's Matchless® Mucker Belts—are brought in to remove the loosened rock (see picture at left).

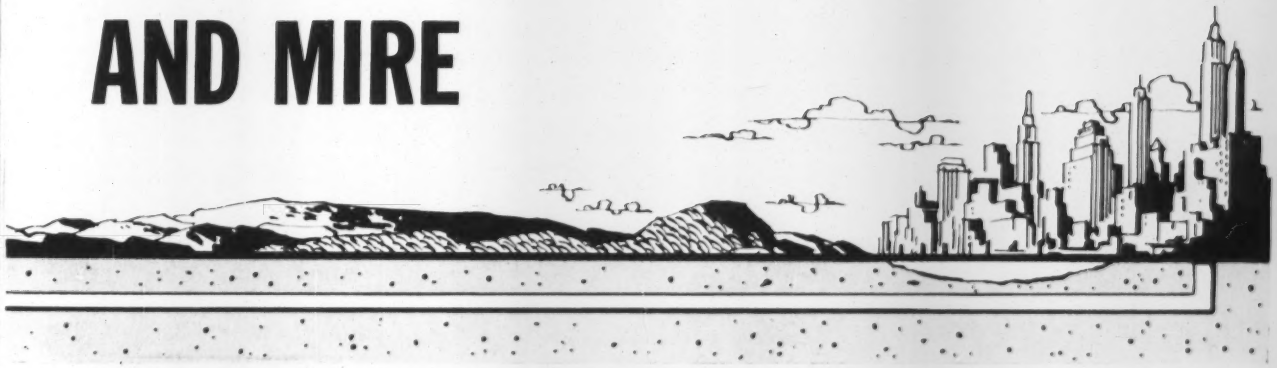
"Red" Gatrell, Supt. of Shaft #2, pointing out the constant problem of water leakage to service engineers of U. S. Rubber on tour of the tunnel. Close and constant observation by "U.S." men of product performance is typical, and is one of the big reasons why U. S. Rubber products are engineered to the job, and outperform all others.



This is a 28", 4-ply (Style XN) cotton-nylon U. S. Matchless Mucker Belt in action near Shaft #2. The tough 3/8" top cover and 3/16" bottom cover resist moisture, abrasion, cutting and gouging. For added carcass protection against high impact and jagged rocks, special white cushion breaker ply of NYTON (a special nylon-cotton weave) "floats" in the top cover and lies between the bottom cover and the carcass.

These muckers, like every piece of machinery below ground, are run by compressed air carried by U. S. Rubber's #4810 Air Hose. Two mucker machines are used per shaft, one operating at each face. The mucker cars are 5-cubic-yard cars, each holding six tons. Every foot of tunnel progress represents about two carloads worth of muck and each blast dislodges enough rock to fill 21 cars. Currently, the contractors are

AND MIRE

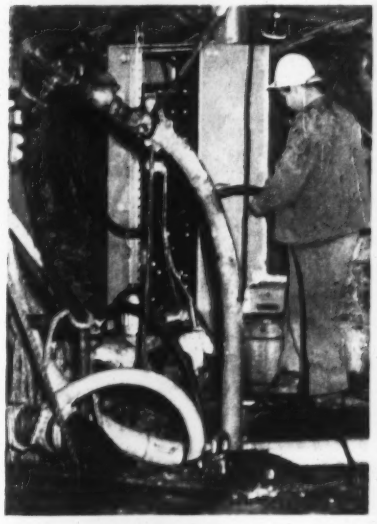


THE 44-MILE WEST DELAWARE TUNNEL

averaging two blasts per shift on each heading. This is pretty severe service for both the U.S. Rubber belt and the mucking machine, yet from the very start, there's been no delay in the vital task of moving the shattered rock from the face and into the mucking cars.

Just about all the rubber products used by the contractors are made by U.S. Rubber—this includes literally thousands of feet of hose—for grouting, air, water and suction—several mucker belts, and quantities of electrical tape to splice the miles of wire and cable.

This on-the-spot photo shows U.S. Grouting Hose placing the 16,000 bags of grout needed to seal off a wet seam that had stopped all progress in the tunnel. U.S. Grouting Hose is perfectly balanced throughout, with an abrasion-resistant tube, a carcass constructed of multiple braids of extra-heavy wire, and a rugged cover to withstand external abuse.



Here, at the bottom of Shaft #2, is an example of the maze of "U.S." air hose, water hose, suction and discharge hose that is used throughout the tunnel. Practically every foot of hose on this job is made by U.S. Rubber.

Handling Water Leakage

Delays, of course, can mean real trouble for the several contractors who have combined resources on the first stage of this West Tunnel project—the $36 million contract for Shafts #1, 2 and 3 and the headings branching out from them. For example, the 2000-gallons-per-minute wet seam that they recently encountered halted progress completely. However, quick-thinking engineering skills—and equipment that stood up under rigorous emergency service—combined to cut the delay to the bone and kept the tunnel's time schedules moving as planned.

One thing is certain . . . there is always water seepage, hour after hour, day after day. For the most part, this presents no serious problem. The constant leakage is pumped out with the aid of U.S. Giant® Contractors Water Suction Hose and U.S. Bengal Water Discharge Hose.

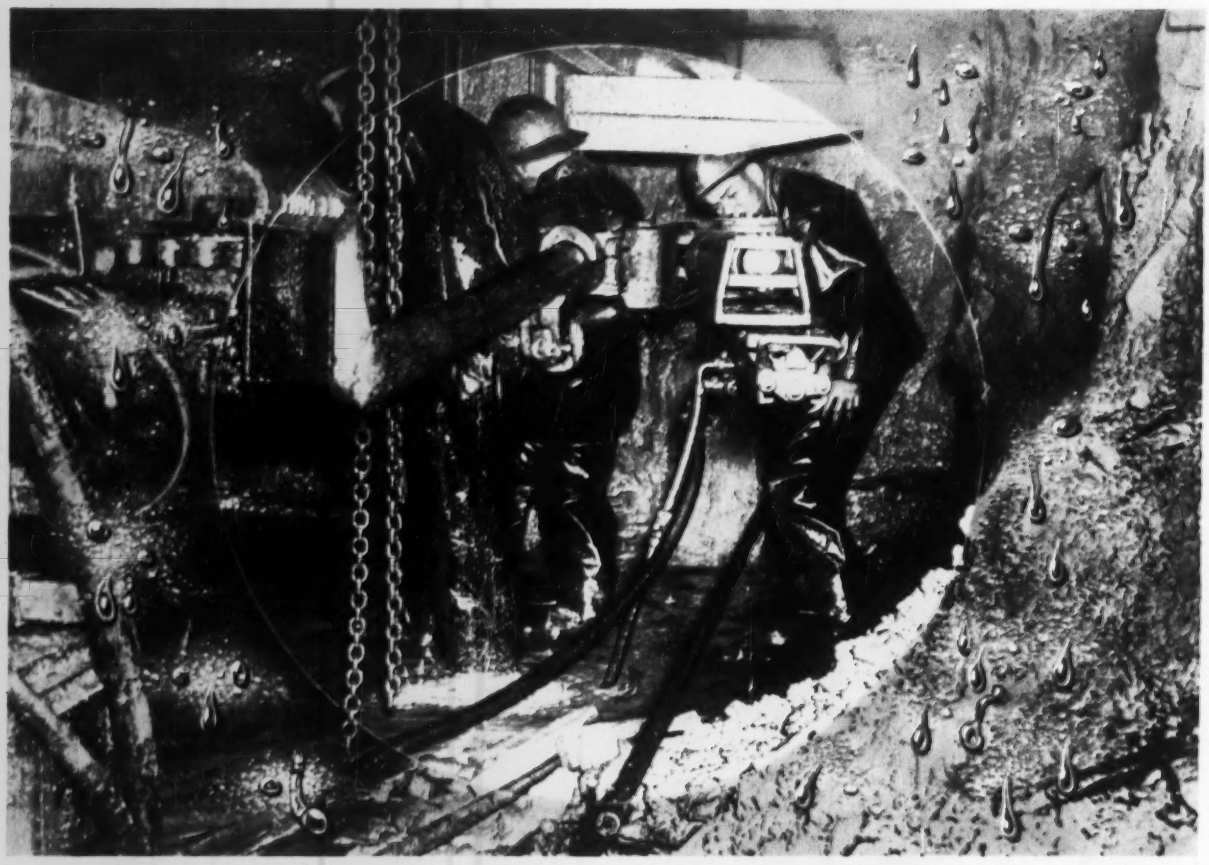
U.S. Giant Hose is particularly valuable suction hose for working in and around heavy equipment because this spring-steel hose can be rounded out when flattened or crushed. And mandrel-made U.S. Bengal Hose with a tube of high quality rubber, a multiple-ply carcass of sturdy cotton duck, and an abrasion-resistant natural rubber cover—is the perfect water discharge hose for the heavy duty encountered on jobs like this.

US RUBBER

Mechanical Goods Division

United States Rubber

US RUBBER AIR HOSE



It's the Air that keeps things moving!

Deep under the Catskill mountains in Southern New York, thousands of feet of air hose snake along the wet, jagged rock passages of the West Delaware Tunnel project.

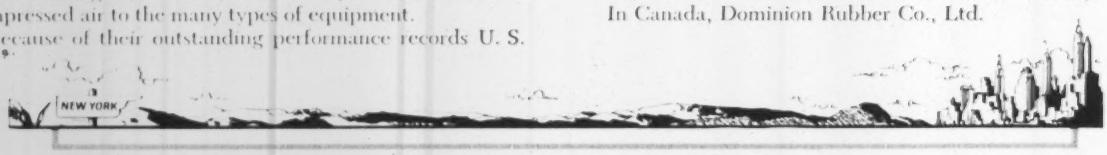
On this mammoth 160-million-dollar, 4-year construction job, everything below ground is run by compressed air (except, of course, the lighting). From muckers to exhaust fans, from suction pumps to jumbo drills, it's compressed air that *keeps things moving*. And every cubic foot of compressed air moves through U. S. Rubber Hose.

First, high-capacity U. S. Bull Line Hose carries the air to the working faces. Then, U. S. 4810 Air Hose moves the compressed air to the many types of equipment.

Because of their outstanding performance records U. S. Bull Line and U. S. 4810 Air Hose were selected by the several contractors involved. Both hose have covers of tough, pure-gum rubber to resist the severe abrasive conditions encountered. Both hose also feature neoprene tubes to combat action of oil in air lines. And between cover and tube, both Bull Line and 4810 have kink-resisting carcasses, each engineered for greatest hydrostatic values.

For all construction requirements, a complete line of rubber products—plus expert engineering assistance—is available at the 28 U. S. District Sales Offices, at selected distributors, or write us at Rockefeller Center, New York 20, N. Y.

In Canada, Dominion Rubber Co., Ltd.



U. S. RUBBER PRODUCTS AT WORK ON THE 44-MILE WEST DELAWARE TUNNEL

US RUBBER Mechanical Goods Division

United States Rubber

Bad Design Blamed for Fire Loss

Survey shows structural fire-protection weaknesses were responsible for considerable damage

A record-breaking 430 large-loss fires in the U. S. and Canada in 1956 caused a direct loss of $330 million, according to a survey made by the National Fire Protection Association, Boston. Of this total, 320 fires occurred in buildings.

These fires, with individual losses of $250,000 or more, are analyzed in a report in the NFPA QUARTERLY MAGAZINE, April issue, published last week. The study reveals that much of the damage could have been prevented by better building design.

"Past studies of fires," the QUARTERLY reports, "have shown that large losses usually can be prevented by structurally limiting the area through which fire may spread. Construction weaknesses have always played a prominent role in the large-loss fire experience, and the 1956 experience was no exception. Of the 320 fires that occurred in buildings, structural fire-protection weaknesses played a significant part in the extent of damage in 260 instances."

The following substandard fire-protection features of the buildings are reported to have contributed to fire spread:

- ▶ Absence of a division wall (instances where good judgment would have recommended subdivision).
- ▶ Substandard division walls (did not extend through roof, low fire-resistance rating, etc.); unprotected doorways in division walls and fire doors blocked open.
- ▶ Open stairwells, open elevator shafts, non-firestopped walls and openings around pipes.
- ▶ Combustible fiberboard and other interior finish, oily floors and walls, and combustible insulation.
- ▶ Combustible buildings without intervening fire walls, outside sprinkler protection or adequate separation from adjoining structures, permitting spread of fire from building of origin to others; poorly constructed party walls and interconnecting passageways.

• **Need for quick detection**—"Provision of means for prompt fire detection is a vital part of a program to prevent large-loss fires," the QUARTERLY points out. Yet, discovery was delayed in 244 building fires last year. In most of these, delay occurred because the buildings were not in operation (closed for the night or weekend) and had been left without watchman or had no automatic fire protection.

In the 76 instances where fire was discovered without appreciable delay, the tremendous advantage gained by prompt detection was lost at 46 fires because alarm transmission was delayed.

Most of the large-loss fires grew to "pumper stream" size before discovery, and as a result fire extinguishers and standpipe hose were not factors in the outcome.

• **Causes**—Of the 320 building fires, known or probable causes have been reported for 144. These include wiring faults, careless smoking, lightning, careless cutting and welding practices, spontaneous heating, defective motors and incendiary or fires having a suspicious origin.

Though a recent study showed that sprinklers have performed satisfactorily in 96.2% of 58,971 fires analyzed, 12% of last year's large-loss fires occurred in sprinklered buildings. However, the report on 1956 fires indicates that where sprinkler performance was unsatisfactory the trouble lay in installation and maintenance of the systems.

In some cases, the hazards of occupancy were too severe for the installation, water was shut off, the systems were damaged by explosions, water supplies were inadequate, or improper storage methods permitted the fires to overcome the spray.

• **Record industrial toll**—Large-loss fires occurred in 1956 in 117 industrial plants—a 50% increase over the previous year. Damage totaled nearly $70 million. There were 37 fatalities and 197 injuries.

Principal building types involved were brick with wood joists (38); wood (29); noncombustible (16) and wood-framed and metal-clad (11). Sprinkler protection was installed in only 23 of these buildings. And in 43 of last year's 50 large-loss warehouse fires, lack of standard watchman protection, standard automatic fire alarms or automatic sprinkler systems was found to be the principal reason the fires spread out of control.

★ ★ ★ ★ ★

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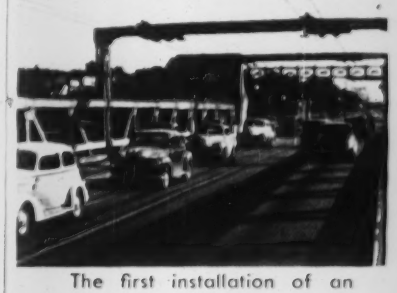
Still Making History!



The first installation of an open steel grid flooring on any bridge in the world was made in 1932, on the University Bridge, Seattle, Washington, by the Irving Subway Grating Co. The previous solid pavement on the bridge had been plagued by frequent repairs and accidents.

After 24 years this decking is still in service on the Seattle Bridge. It has had no major repairs and has never even been painted. Not a single accident has occured due to the bridge flooring.

Since then, 80% open Irving Decking has been used advantageously on hundreds of other bridges.

This remarkable record of service speaks for itself.

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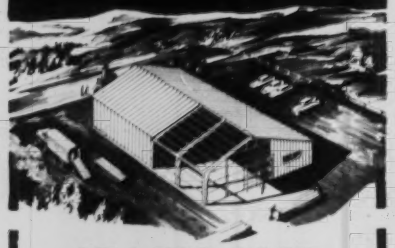

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Steelcraft buildings are *permanent* and provisions are "built in" for economical future expansion. You can buy to suit your exact needs . . . any width, height or length, with spans up to 80 feet . . . choice of wall and roof materials, doors, windows, skylights, insulation.

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Men and Jobs

Frederick T. Mavis

F. T. Mavis Is New Dean at University of Maryland

Frederick T. Mavis, head of the department of civil engineering at Carnegie Institute of Technology, Pittsburgh, since 1944 has been appointed dean of the College of Engineering, University of Maryland, at College Park, Md. He will succeed Dean S. S. Steinberg, who ended a 38 year tenure at Maryland last October to become head of a government aeronautical school in Brazil.

Dean Mavis, a structural and hydraulic engineer, is a graduate of the University of Illinois, the Technische Hochschule in Baden, Germany and was a Freeman Traveling Fellow in Europe in 1927-28. He began his engineering career with the consulting firm of Kelker, DeLeuw Co., Chicago in 1922. From 1928 to 1939 he was at the University of Iowa, rising to become head of the department of civil engineering, and associate director of the Iowa Institute of Hydraulic Research. From 1939 to 1944 Dean Mavis was head of the civil engineering department at Pennsylvania State College, leaving there for his present position at Carnegie Tech.

Standard Oil Co. Grants Five Fellowships at Yale

Five $2,000 fellowships to graduate engineers for study at Yale University's Bureau of Highway Traffic will be awarded by the university this year under an increased grant from Esso Safety Foundation.

The foundation was established by Esso Standard Oil Co. to help combat the mounting death and accident toll on the nation's highways. It has supported three fellowships at Yale each year since 1954.

The fellowships are open to graduate engineers working toward advanced degrees, and are granted to candidates selected by Yale from the 18 eastern and southern states and the District of Columbia, where Esso Standard operates. The awards cover tuition, a monthly living allowance and a fund for individual research projects.

Careers

Business

Harrison H. Roberts has been named vice president of Intrusion-Prepakt, Inc., and Prepakt Concrete Co., Cleveland. In his new position Mr. Roberts will deal with all phases of company operations throughout the world. Prior to this appointment, he was manager of foreign operations, an assignment he assumed when he joined the organization in 1956.

Lawrence C. Miller has joined the firm of Floyd G. Browne & Associates, consulting engineers of Marion, Ohio. Mr. Miller studied at Carnegie Institute of Technology, Rensselaer Polytechnic Institute and the University of Southern California. Prior to assuming his new post, he had served for three years as a professional engineer in Oklahoma, and for 16 years was active in engineering and construction fields in Southern California.

Betz Laboratories, Inc., is the new name of the Philadelphia consulting service for industrial water problems formerly known as W. H. and L. D. Betz.

Charles L. Nichols, chief engineer in the Los Angeles office of Dames & Moore, is made an associate. **Malcolm D. Horton** takes over the post of chief engineer.

Government

Joseph Berrier, an engineer with the North Carolina State Highway Department, has resigned his post to accept a position with the City of Winston-Salem.

Scott P. Hart, State Highway Engineer for the Montana State Highway Commission since January, 1953, is resigning May 15. He previously held the same road post during 1948-49.

W. H. Webb, Jr., senior right-of-way engineer with the North Carolina Highway Department, has been promoted to chief right-of-way engineer. He succeeds T. B. Wilson, who retired April 1 after 31 years with the department.

(M&J continued on p. 72)

HERE'S LOADER MOBILITY . . . EXCAVATING STRENGTH

LOADS 1½ CU YD AT A PASS . . . 2¼ yd with light materials bucket. Lifts up to 11,200 lb.

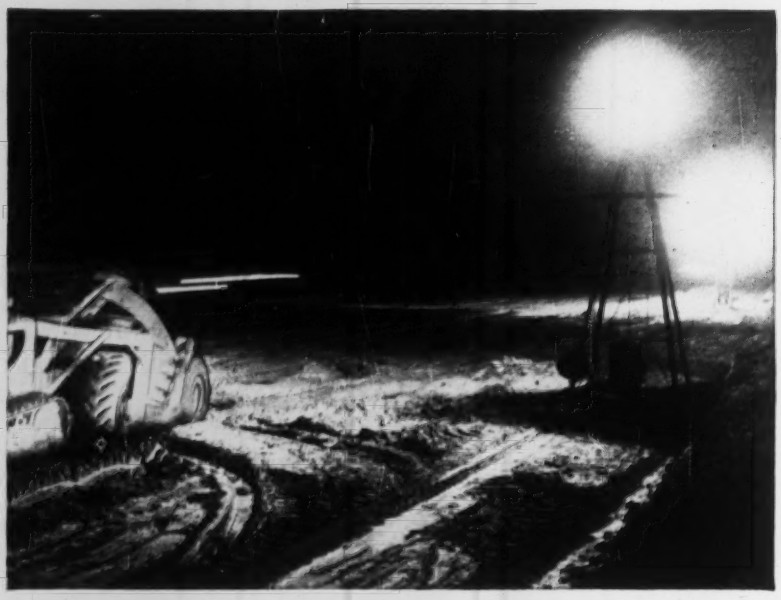
WORKS RIGHT UP ON A STOCKPILE where wheels dig in. Can build stockpiles higher, store many more yards of material in a given area.

TURNS IN ITS TRACKS . . . where many smaller loaders have to jockey.

DIGS INTO HARD-PACKED MATERIAL . . . exerts 20,000-lb break-out force, with 72 net engine hp and modern bucket design.

These are just four examples of how an Allis-Chalmers HD-6G tractor shovel offers a combination of strength, traction, flotation and mobility that enables it to replace a fleet of part-time specialized machines. You can count on it to boost production the year round. Ask your Allis-Chalmers dealer about the HD-6G . . . also the three larger tractor shovels with capacities up to 4 cu yd. Allis-Chalmers, Construction Machinery Division, Milwaukee 1, Wisconsin.

ALLIS-CHALMERS *Engineering in Action*



ACRES OF DAYLIGHT

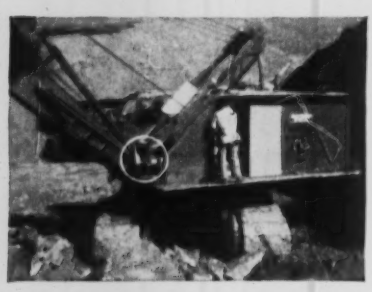
for the night shift with ONAN power

For night lighting on big projects an electric plant should combine high capacity with mobility . . . *high capacity* to handle a bank of powerful floodlights . . . and *mobility* to simplify frequent moving on the job site.

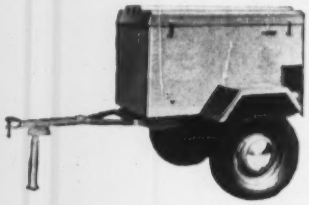
The Onan 10CW electric plant meets both requirements. It delivers 10,000 watts A.C., yet it weighs only 800 pounds. It is completely Onan-built, with a heavy-duty Onan 2-cylinder, gasoline engine direct-connected to an Onan all-climate generator in a permanently-aligned, compact, long-life unit. Starts instantly in any weather. Air-cooling eliminates trouble from freezing or leaking coolants. Available also as a 7,500-watt unit.

Put these mobile, high-capacity units to work on your next lighting job.

Onan 10CW mounted on a portable, skid-mounted floodlight tower. This unit is being used for night operations on a St. Lawrence Seaway project.



Onan 3KW Series 3DSP Diesel electric plant mounted on shovel—lights cab and work area.



Trailer-mounted 10CW. Tow it anywhere behind car or truck. Weatherproof housing.

500 to 75,000 watts

Lightweight, portable, gasoline-powered plants: 500 to 10,000 watts. Water-cooled plants: 10,000 to 75,000 watts. Air-cooled Diesel Plants: 3,000 and 5,000 watts.

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3049 University Ave. S.E., Minneapolis 14, Minnesota

. . . Men and Jobs

Frank L. Suplee, Jr., has been appointed by the Delaware River Port Authority as superintendent of its newly created Department of Bridges, which will supervise operation of both the Benjamin Franklin and new Walt Whitman Bridges. Mr. Suplee, an employee of the Authority since 1932, has been superintendent of the Benjamin Franklin Bridge since 1952. **Capt. Ephraim Sharp,** head of the Authority's toll department since 1929, has been named assistant to Mr. Suplee.

Robert P. Leatham, hydraulic engineer on the Bureau of Reclamation's Region 3 river control staff, is transferred to the Corps of Engineers' district office in Sacramento. He will be assistant to the chief of the reservoir regulation section and chief of the manuals unit.

George Schock, relocation resident engineer at The Dalles Dam, is transferred from the Portland, Ore., to the Walla Walla, Wash., district of the Corps of Engineers to assume similar duties at the Ice Harbor Dam project on the Snake River near Pasco.

George Tank is appointed general superintendent of operations of the Imperial Irrigation District in El Centro, Calif.

Associations

Richard G. Kimbell has been named acting vice president of the National Lumber Manufacturers Association in Washington, D. C.

Waldemar S. Nelson, New Orleans, has been elected president of the Louisiana Engineering Society.

E. C. S. Cox, Toronto, is the new president of the Ontario Association of Architects.

W. H. Stewart of Sun Pipe Line Co., Beaumont, Texas, is elected president of the National Association of Corrosion Engineers. He succeeds **William F. Fair** of Koppers Co., Pittsburgh.

Education

Frederick L. Hotes leaves his post as associate professor of civil and irrigation engineering at the University of California to join Development and Research Corp., New York City, as water conservation engineer.

Cornelius Wandmacher, professor of civil engineering, becomes associate dean of the University of Cincinnati's college of engineering, effective Sept. 1, when **Howard K. Justice** becomes dean.

Prof. Robert B. B. Moorman will head the civil engineering department at Polytechnic Institute of Brooklyn as of Sept. 1. He now occupies a similar post at Syracuse University.

HERE'S BIG-GRADER PERFORMANCE

. . . *economy size*

The Allis-Chalmers Model D is a full-fledged motor grader . . . and a "natural" for road construction and maintenance jobs where fine grading performance and low cost are both important!

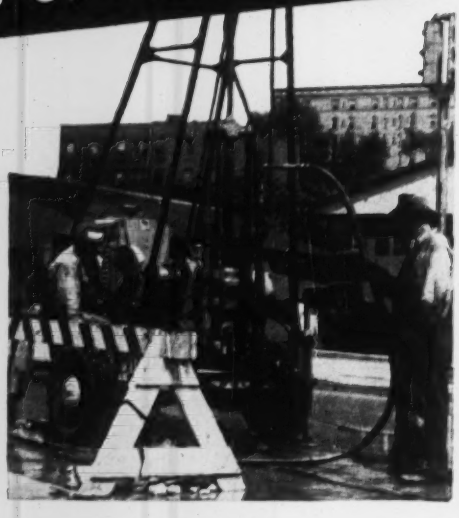
It has the basic design and performance features found in machines costing up to three times as much, but there is one important difference: The Model D is compact and maneuverable enough to work in crowded areas where many other graders cannot operate.

To add still further to its usefulness, the Model D may be equipped with a rear-mounted, ⅝ cu-yd loader, scarifier, shoulder maintainer, leaning front wheels, power circle turn, shiftable moldboard. Optional cab offers year-round operator comfort.

Let your Allis-Chalmers dealer show you how the Model D can measure up to your standards of grader performance . . . at low cost. Allis-Chalmers, Construction Machinery Division, Milwaukee 1, Wisconsin.

ALLIS-CHALMERS *Engineering in Action*

drilling for the highways of tomorrow



When it's better to be safe than sorry, engineers investigate underground conditions. And, that's exactly what this Acker TH drill is doing — drilling test holes over a walled-up section of the old Erie Canal preparatory to building an overhead express highway.

For low-cost, dependable sub-soil information, try an Acker on your next job. Several models available with power and type of mounting to best serve your requirements.

Write today for prices and Bulletin 30. ENR

ACKER DRILL CO., Inc.

725 W. Lackawanna Avenue
Scranton, Penna.

a comlete line of Diamond and Shot Core Drills, Drilling Accessories and Equipment

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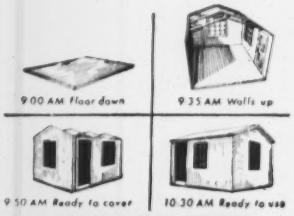
3 Man-Hours



PERMANENT but **PORTABLE** union-built construction buildings of finest kiln-dried, tongued and grooved West Coast lumber. No foundations needed. Sections bolt together quickly for strong, rigid, on-the-job service. Easily dismantled and moved. Buildings come complete with wooden floor, skids, roofing, doors, windows, hardware and prime-coated exterior.

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USED BY: John F. Beasley Co. • Bechtel Corporation • Chicago Bridge & Iron Co. • Emerson-Comstock Co. Inc. • George A. Fuller Co. • Herlihy Mid-Continent Co. • J. Livingston & Co. • S. N. Nielsen Co. • Wm A. Pope Co. • Sumner Sollitt Co. • Surface Combustion Corp. • Turner Construction Co.

ECONOMY Construction Buildings are available in many sizes to satisfy any space requirements. Three buildings in picture L to R 14x33' ($1034.00), 14x26' ($818.00), 10x12' ($347.30) F.O.B. West Chicago, Illinois.

30' WIDE SERIES ideal for offices, workshops, sheds, storage. Extensible in 10' sections from 20' length to 250' and up. Post-supported roof—no floor, 30' x 100', only $3665, F.O.B. West Chicago, Illinois. Available also in clear span.

SAVINGS — Original cost + erection + reuse + resale value!

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Obituaries

Charles E. Cassagne, Jr., 47, chief engineer for the Mississippi River Bridge Authority and administrative engineer for the New Orleans Railroad Terminal Board, died April 3, in New Orleans. A graduate of Tulane University, Mr. Cassagne was survey party chief of the Louisiana Geodetic Survey from 1934 to 1937, and in 1938 became associated with the New Orleans City's Engineer's Office. During the war he served with the Corps of Engineers in engineering and construction of airfields.

Harry O. Bagley, 74, former civil engineer for the City of Rochester, N. Y., died April 4. Before entering city service he was with Scott Bros. Construction Co.

Dwight T. Francis, 62, an engineer with the New York State Highway Department, died April 2 in Richmond, Va. He served as a drafting engineer in the location and design division.

C. Ray Shinn, 72, former senior vice president and director of Morrison-Knudsen Co., Inc., Boise, died April 1 in Seattle. He had been with M-K for 33 years before retiring in 1952. During his last 10 years with the company he headed the Seattle and Alaska districts.

Wharton Green, Sr., 77, former partner in the New York consulting engineering firm of Downer, Green & Carrillo, died April 19 in Murray Hill, N. J. In the course of his 54 year career he was responsible for the engineering work on many large projects. One was Idlewild Airport, which, exclusive of buildings, was designed by and constructed under supervision of Downer, Green & Carrillo.

Mr. Green, retired since 1952, was resident U. S. project engineer on construction of both the Triborough Bridge and Lincoln Tunnel. He also was liaison engineer for the New York Worlds Fair with New York State and New York City on permanent improvements valued at $60 million. While with Wharton Green & Co. which he organized in 1911 and headed until 1935, he designed and supervised construction of many buildings throughout the world, including the American Embassy in Tokyo.

Mr. Green was graduated in 1898 from Millsaps College in Jackson, Miss.

Prior to 1911 he worked as a construction engineer for the Illinois Central Railroad. Later, in the same capacity for Westinghouse, he spent four years in England and Scotland.

ARCHITECT: "For an industrial building that's low in cost and yet a credit to my client—this is the material!"

BUILDER: "K&M Corrugated Asbestos can be put up fast, and with regular carpenter's tools."

FIRE UNDERWRITER: "Easy to approve, and often for minimum rates, since it won't burn."

MAINTENANCE ENGINEER: "Practically no upkeep —it won't rust or rot, and needs no protective paint."

"THEY ALL SAID K&M CORRUGATED ASBESTOS!"

"I listened to the testimony above—and then decided on K&M Corrugated Asbestos for my new plant addition, at rock-bottom cost."

This wise owner learned that K&M Corrugated, for roof and curtain walls, is practically indestructible—it's made of asbestos fiber and portland cement, compressed under tremendous pressure. It fits 101 industrial applications attractively, without the cost of protective paint.

Tell your architect and/or builder you want K&M Corrugated Asbestos Roofing and Siding, to get low first cost, inexpensive construction, long life with little maintenance. For further information, write direct to us.

KEASBEY & MATTISON
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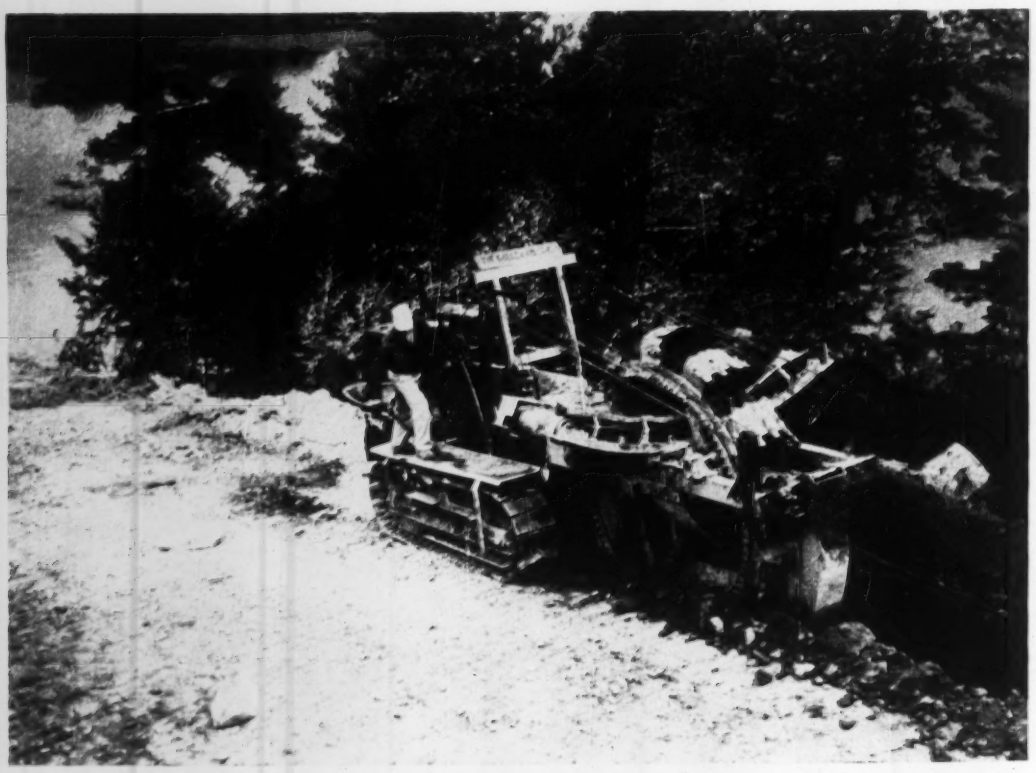
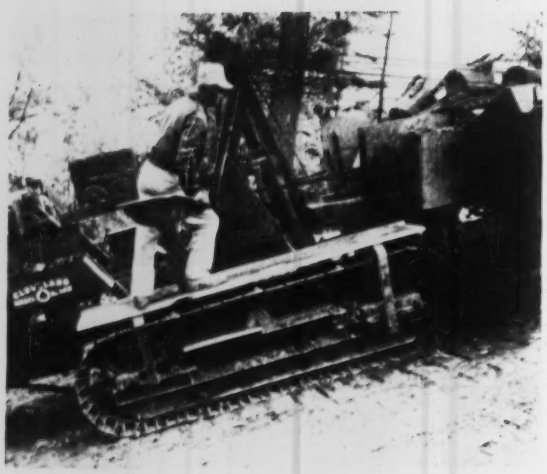


Cleveland 140 digs through rocky New Hampshire hills



"...exceeds wildest expectations"

"We got trench with our Clevelands where we thought it would be impossible," says H. J. Burns of Hallen Construction Co., Island Park, N. Y., about a recently completed pipeline job for the Granite State Transmission Co., between Exeter and Somersworth in the rugged New Hampshire hills. The Hallen spread cut through numerous swamps and terrain strewn with boulders and choked with frequent outcroppings of rock.

"Our Cleveland 140 cut 24 miles of our 30-mile section—dug everything except the deepest swamps and solid ledge rock. It dug through shale and even handled boulders up to 6 and 8 cubic yards. Even in the toughest going the 140 never fell below 1,700 feet of trench per day and averaged 2,200 feet per day for the whole job."

Good Everywhere

THE CLEVELAND TRENCHER COMPANY

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Legal

No Commission Allowed On Government Contract

In a recent Pennsylvania case,[1] a party brought an action to recover commissions for obtaining a government contract. The action was dismissed on the ground that the contract, being on a contingency basis for obtaining government contracts, was invalid and void.

The court stated: "In Le John Manufacturing Company v. Webb, 95 U. S. App. D. C. 358, 222 F. 2d 48, an agent brought an action against a contractor to recover commissions under a contingent fee contract based on sales to the United States government. The contractor's defense was that the contract was illegal under Executive Order No. 9001. In holding that the contingent fee contract was unenforceable, the court said, 222 F. 2d at page 50: 'Contingent fee contracts to secure government business for the employer of the recipient of the fee have been held invalid because of their tendency to induce improper solicitation of public officers and the exercise of political pressure.' Muschany v. United States, 1945, 324 U. S. 49, 64, 65 S. Ct. 442, 450, 89 L. Ed. 744. This traditional policy of the courts was reinforced by Executive Order No. 9001, ... The purpose of this requirement of the Executive Order is plain; it reflects the public policy long enunciated by the courts, and adds to it a thrust comparable to that of statutory law. See Mitchell v. Flintkote Co., 2 Cir., 1951, 185 F. 2d 1008. A compensation contract in violation of the required warranty will not be enforced by the courts. The rule is established in Pennsylvania that a contract, under the terms of which one party is to receive compensation contingent upon his obtaining government business without disclosing to the public officers his financial interest is void. . . . Such a contract is plainly against public policy because of its corrupt tendency; it tends to a sale of personal influence in circumstances in which it is the duty of public officers to make the best possible appointment without regard to private interests, and in which that duty cannot properly be performed in ignorance of the contingent interests of the interceding party. Such agreements are uniformly declared invalid, not because in particular cases improper influences were contemplated or used, but because of the general tendency to overreach the public."

(1) Kribbs v. Jackson, 129 A. 2d 490, Supreme Court of Penn., Jan. 7, 1957 and numerous cases there cited.

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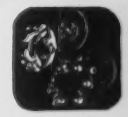
MULTIPLE CLUTCH SPRINGS

ASSURE EVEN PRESSURE

As many as 24 best quality springs are used in ROCKFORD Spring-Loaded CLUTCHES—to assure even pressure all around the plate. Made of heat-resistant wire (that will not take a "set") the springs provide long service life in today's high-speed engine driven vehicles.

SEND FOR THIS HANDY BULLETIN
Gives dimensions, capacity tables and complete specifications. Suggests typical applications.

ROCKFORD Clutch Division BORG-WARNER
313 Catherine St., Rockford, Ill., U.S.A.
Export Sales: Borg-Warner International — 36 So. Wabash, Chicago 3, Ill.


Small Spring Loaded

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Oil or Dry Multiple Disc

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Power Take-Offs

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Don't trade permanence for price

Build for keeps –for less– with Butler

You needn't sacrifice building permanence for low cost. Butler metal buildings combine proved engineering and construction principles with mass production. The result is lifetime durability at prices surprisingly low in terms of quality.

To begin with, Butler buildings are all metal – the acknowledged superior building material of the mid-twentieth century. But it is what Butler *does* with metal that puts it in a class by itself – that makes it more than just another metal building. Take two Butler features, for example.

The Butler rigid frame. Each frame member is of tapered design for greatest strength per pound of steel. This provides greater capacity to withstand stresses from high winds, snow loads, cranes.

Butler die forming. Every Butler panel is die formed for added strength. Each coincides perfectly with its mates, without makeshift tin-smithing, providing the weather-tightness of a one-piece shell.

The list of Butler advantages . . . the remarkable things Butler does with metal . . . the reasons for Butler's moderate prices . . . comprise a 12-page catalog – or a 30-minute film. Your Butler Builder will be glad to show you both. Won't you call him? He's listed under "Buildings" in the yellow pages of your phone book.

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Manufacturers of Steel Buildings • Oil Equipment
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Unit Prices

Texas Airport Extends Instrument Runway

The 2,050 x 200 ft extension of the instrument runway with taxiway and lights will provide safer operational facilities at Greater Fort Worth International Airport, Tex. Work is for the City of Fort Worth, Public Works Department, C. M. Thelin, Director. Hedrick & Stanley, Fort Worth, are the consulting engineers.

The $444,905 contract to Kenneth W. Lott, Fort Worth, is only 1% below the second low bid and 4% below the engineer's estimate.

Reinforced concrete pavement, 11 in. and 8 in. thick, is placed on a 4 in. aggregate subbase course.

To prevent aircraft accidents, contractor, airport management, city and CAA set up operating procedures.

All bidders agreed to complete the job within 90 working days.

Minimum wage rates include $3.125 for electricians, $2.125 for concrete paving mixers, $2.00 for concrete finishers and motor graders, $1.75 for iron workers, $1.50 for pipe layers, $1.25 for semi-skilled and $1.00 for unskilled laborers.

The six bidders include:

1C Kenneth W. Lott, Fort Worth, Tex.	$444 905
2 Worth Construction Co., Fort Worth, Tex.	449 431
6 Ottinger Construction Co., Fort Worth, Tex.	559 227
EE C. M. Thelin, Public Works Director	484 588

Bids: 2-14-57 Items	Unit	Quantity	Unit Prices 1C	2
Exc, unclassif	cy	167 746	$0 37	$0 39
trench	cy	3 408	1 50	1 15
for struct, headwall	cy	35	3 00	5 00
RCP, SS, culv, 24"	lf	1 843	2 95	3 52
30"	lf	375	1 65	1 68
42"	lf	650	7 00	8 00
PCC, struct, headwalls	cy	4	70 00	100 00
Steel, reinf, headwalls	lb	400	0 15	0 20
Inlet, type A	ea	3	210 00	210 00
type A, modified	ea	2	260 00	250 00
type B	ea	1	315 00	255 00
Conc, pipe cradles	cy	10	20 00	50 00
Sub-base crse, agg, 4"	cy	8 750	2 00	2 31
Shoulder matl, agg, ip	cy	1 320	2 00	1 25
Pvmt, RPCC, ip, 8"	sy	26 778	3 54	3 43
11"	sy	46 727	4 54	4 45
Trench, airp cable, CAA spec L-108, 12" wide	lf	4 300	0 21	0 22
8" wide	lf	4 600	0 21	0 22
Cable, airp, Str #8, CAA spec L-824B, L-108, 3,000v	lf	5 500	0 275	0 28
5,000v	lf	14 000	0 37	0 37
Duct, 2-way, CAA spec L-110	lf	709	2 95	2 97
Marker lights, blue, airp taxiway	ea	36	91 00	92 00
high intensity, runway	ea	4	355 00	360 00
Lights, runway, rem filters	ea	15	355 00	360 00
runway threshold, high intensity, remov & reloc.	ea	4	80 00	80 00
RCP, std. 6", undde	lf	650	1 25	1 00
Bkfl No. 2, porous, ip	cy	56	5 00	3 00
Seeding	ac	37	175 00	265 00
Sprigging	ac	33	250 00	318 00

Time to complete: 90 working days

New York School Prices

School construction costs continue to rise in New York State this year. Three schools reported in 1957 by the State Education Department show a new record high of $16.50 to $23.10 per sq ft of elementary school (kindergarten through sixth grade) with two large units such as a gymnasium and auditorium.

The median cost of these three schools is 16% above the median cost for the full year of 1956. This compares to a 12.4% increase from 1955 to 1956, when the ENR Building Cost Index measured an increase of only 4.0%.

Median costs rose 4.8% (in 1956) for elementary schools with one large unit and 12.7% for schools with two large units.

Secondary schools rose 6.1% in 1956 as compared to a 6% increase in 1955.

School Costs Per Square Foot in New York State

State Education Department, Division of School Buildings and Grounds

	No. of Schools K-6	Elementary, K-6 Dollars per sq ft for schools with One Large Unit*			Two Large Units*			Three Large Units*			No. of Schools 7-12	Secondary, 7-12 Dollars per sq ft		
	Total	Min	Med	Max	Min	Med	Max	Min	Med	Max	Total	Min	Med	Max
1949	29	$16 40	$14 00	$19 20	$12 00	$14 60	$18 70				4	$13 20	$13 35	$16 20
1950	20	10 85	17 00	20 80	13 75	16 66	17 80				4	13 35	13 70	14 40
1951	59	12 30	16 45	25 40	18 70	20 25	22 60	$13 90	$23 60	$29 20	6	15 40	16 97	19 30
1952	57	11 40	16 30	20 20	13 00	17 60	21 10	14 20	18 20	23 30	7	15 00	17 10	19 90
1953	65	10 20	16 05	23 40	13 60	16 15	19 40	11 30	16 30	18 80	12	14 15	16 00	18 80
1954	70	10 00	14 55	20 80	12 80	16 05	21 80	14 80	15 30	18 40	17	13 70	15 60	18 00
1955	52	11 75	16 40	23 60	11 90	15 70	20 25	14 90	14 90	15 90	13	12 55	17 10	18 50
1956	46	12 90	17 18	23 80	13 25	17 65	21 10	16 50	16 80	17 10	7	15 40	18 15	20 90
'55, Q1	17	13 60	16 40	17 35	12 70	14 53	15 90		14 90		4	12 55	15 15	17 50
Q2	15	11 75	15 83	19 90	11 90	15 70	17 20				3	15 60	17 20	17 30
Q3	8	17 50	18 25	19 90	15 90	16 90	20 25				4	15 30	16 40	18 50
Q4	12	15 50	16 95	23 60					15 90		2	18 25	18 33	18 40
'56, Q1	11	14 95	15 10	18 40	14 45	16 80	18 50				2	16 75	18 83	20 90
Q2	18	14 40	16 50	18 55	14 60	18 00	19 00		17 10		2	15 80	16 98	18 15
Q3	8	12 90	19 10	21 60	14 15	18 50	21 10		16 50		2	15 40	17 25	19 10
Q4	9	16 00	19 50	23 80	13 25	18 48	21 00				1		18 60	
'57, Q1	3				16 50	20 50	23 10							

*Large Unit includes a general purpose room, gymnasium, auditorium, multi-purpose or other group activity room.

These are costs based on the four contracts – general construction, plumbing, electrical, heating and ventilating. They include built-in features, but no movable furniture or equipment. Some minor site improvement may be included, but no major site work and no land costs.

"EASIER LOADING *than any others we tried*"

That's what operator Clarence Grasse says about the Allis-Chalmers TS-260 he operates on a cut-and-fill road job near Waubeka, Wisconsin.

It's the curved bowl bottom and offset cutting edge design that make the TS-260 easier to load. Dirt "boils" through the center of the load, keeps the load live, fills the bowl with 14-yard heaped loads time after time.

On road jobs like this one, the TS-260's short turning radius—a complete turn in only 30 ft—eliminates need for extra travel-to-turn areas, shortens cycle time, gets job done faster, easier.

Maneuverability and full-capacity loading are only two of many advanced-design features that make the TS-260 motor scraper outstanding in performance and dependability. See your Allis-Chalmers dealer for the full story now. Allis-Chalmers, Construction Machinery Division, Milwaukee 1, Wisconsin.

ALLIS-CHALMERS *Engineering in Action*

Materials and Labor Prices

Monthly Market Quotations by ENR Field Reporters

See following ENR issues for OTHER PRICES

- Cement, Aggregate, Ready-mixed Concrete, Asphalt: Last, Apr 4; Next, May 9
- Iron and Steel Products, Pipe: Last, Apr 11; May 16
- Wood Products, Glass, Explosives, Chemicals: Last, Apr 18; Next, May 23
- Clay Products, Lime, Plaster, Paint, Roofing: Last, Apr 25; Next, May 30

BUILDING BOARD & LATH AND INSULATION—DELIVERED TRUCKLOAD LOTS

	GYPSUM PLASTER BOARD tapered edge per Msq ft ½"	½"	GYPSUM BOARD LATH plain or perf per Msq ft ½" x 16" x 48"	GYPSUM SHEATHING tongue & groove per Msq ft ½" x 2' x 8'	FIBER BOARD SHEATHING asph impreg & coat per Msq ft ½" sq ed	½" T&G	FIBER BOARD INSULATION sq edge, paint per Msq ft ½"	MINERAL WOOL INSULATION† loose, per 40-lb bag a	3" batts per M sf	GLASS FIBER INSULATION† loose, per 40-lb bag a	3" batts per M sf	ALUMINUM FOIL 60¢ Kraft 1 side foil per roll of 250 s. f.	Expansible Blanket 2 layers foil per Msq.ft
Atlanta	$70.00	$60.00	$43.00	$70.00	$70.00	$127.00	$70.00	$1.00	$60.00	$2.00b	$75.00	----	----
Baltimore	51.25f	44.75f	32.55f	55.00f	65.00f	108.50f	69.00f	1.30	66.50	1.60	43.00	$4.00g	$33.50
Birmingham	73.00	60.00	47.77	75.00	82.00	136.50	81.00	1.40	70.00	1.60	75.00	3.13g	----
Boston	60.00m	50.00m	36.00m	60.00m	65.00m	120.00m	79.00An	1.45	75.00	----	60.00	6.00	55.50
Chicago	67.00	52.00	43.00	62.00	87.00	125.00	87.00	1.55	80.00	----	63/65bb	5.25g	----s
Cincinnati	47.40w	42.35w	31.55w	50.55w	70.00w	125.00w	72.50w	1.25	60.00	1.25	73.50	3.12j	50.00mm
Cleveland	50.50	55.00	40.00	65.00	74.00	130.00	80.00	1.35/1.50	75.00	1.60aa	60.75aa	17.50o	50/55
Dallas	58.00	55.00	42.50	65.00	73.50	122.50	70.00	1.90	65.00	1.35	66.10	4.25g	----
Denver	62.00	54.50	41.00	62.00	75.90	126.00	74.90	----	71.00l	1.25e	65.00	11.00r	21.00
Detroit	59.00	49.50	36.00	61.00	59.50	90.00	59.00	----	----	1.95b	83.00	----	----
Kansas City	65.00	55.00	40.00	65.00	72.00	120.00	75.00	1.40	80.00	1.40	80.00	11.24dt	19.44
Los Angeles	64.00	50.00	0.325z	66.50	71.87	121.25	80.00	----	83.00	1.35e	64.00	4.57g	----s
Minneapolis	80.00	70.00	0.40z	80.00	70.00	140.00	78.00	1.60	80.00	1.80	80.00	5.50	----
Montreal	58.00	47.40	36/39	63.00	63.25	----	63.00	1.30	58.00	1.30	58.00	16.20o	56.00
New Orleans	57.00	48.00	45.00	60.00	75.00	125.00	72.50	1.75	68.00aa	----	----	----	----
New York	53.00	45.50	35.00	54.00	74.50	118.00	73.50	1.55	65.00	1.90e	67.00	5.20	48.80ee
Philadelphia	50.00	48.00	34.00	48.50	67.50	105.00	55/60	----	63/70	----	70/75	5.60/6.34	34.50/44.50
Pittsburgh	65.00	55.00	40.00	68.00	65.00	105.00	60.00	1.90	72.00	1.90	72.00	4.10	----
St. Louis	65.00	55.00	39.00	70.00	75.00	120.00	80.00	1.35	85.00	1.65	70.50	5.85i	----
San Francisco	54.00	46.00	0.35z	57.00	67.50	108.00	66.50	1.60	66.50	1.60	66.50	4.95	55.00
Seattle	66.00	57.50	45.00	65.00	74.50	125.00	73.50	1.60y	74.00	1.60aa	50.00aa	4.25g	46.50
Toronto	61.00	50.00	38.00	64.50	75.00	----	----	1.40	60.00	----	60.00	16.00o	45.45

•a for hand packing •b per 30# bag •d 40¢ kraft paper •e 20¢ sq ft bag, 4" thick •f full trailer loads •g 80¢ kraft paper backing •h LCL •i 40 lb roll •j 80 lb roll •l flame proof $75.00 •m 10 ton quantities •n distributor's siding •o per Msf roll •p per sf •r per cwt •s per 35# bag •t per M sq ft •w fob city •x per sq. yd. •y 26# bag •z 32# bag •aa fob warehouse •bb 2" •cc in 250 sf rolls, of 16", 20", or 24" width.

HOURLY WAGE RATES—Base rate + fringe benefits

	Bricklayers	Carpenters	Struct. Iron Workers	Hoisting Engineers	Plasterers	Electrical Workers	Steamfitters	Common Labor Building	Common Labor Heavy Const
Atlanta	$3.35	$2.80	$3.05	$2.80	$3.00	$3.20	$3.20+25¢cc	$1.45	$1.45
Baltimore	3.45+10¢d	2.95+7½¢l	3.50+7½¢l	2.70/2.95+10¢d	3.25+7½¢l	3.30	3.20+7½¢l	1.80+7½¢l	1.80+7½¢l
Birmingham	3.50	2.70	3.00+7½¢h	2.52	2.92	3.175	3.25+10¢cc	1.50	1.60
Boston	3.50+10¢d	3.25+10¢d	3.55+7½¢h	3.65+10¢‡	3.50+20¢f	3.30+12¢bb	3.20+10¢d	2.30+7¢l	2.30+7¢l
Chicago	3.62½+7½¢h	3.35+10¢d	3.55+7½¢h	3.25+5¢m	3.54+23¢s	3.65+22¢f	3.37+22¢cc	2.57½+7½¢h	2.57½+7½¢h
Cincinnati	3.60	3.30	3.35+7½¢h	3.075/3.325	3.375	3.50+3¢N	3.50+9½¢Z	2.35	2.25
Cleveland	3.71½+10¢	3.74	3.64+10¢f	3.74	3.575w	3.765	3.64+10¢d	3.00	2.915
Dallas	3.70	2.95	3.12½+7½h	3.075	3.50+7½¢h	3.12½+7½¢h	3.10+7½¢h	1.55	1.55
Denver	3.75	3.075	3.10+7½¢l	2.95	3.37+12½¢bb3.00		3.35+15¢O	2.10	2.10
Detroit	3.53+20¢ss	3.20+29¢s	3.47½+20¢f	3.20+20¢ccc	3.51+24¢cf	3.50+30½¢ff	3.45+14¢B	2.45+20¢ccc	2.55+10¢s
Kansas City	3.75	2.95	3.10	3.095	3.375	3.325O	3.40+7½¢h	2.255	2.305
Los Angeles	3.80	3.00+10¢d	3.40+10¢s	2.95+10¢d	3.75+12½¢bb	3.60	3.55 +10¢d	2.30+7½¢h	2.30+7½¢h
Minneapolis	3.425	3.00	3.17	2.95	3.10+23½¢w	3.12=	3.065+20¢cc	2.25	2.25
New Orleans	3.25+5¢m	2.725	3.10+7½¢h	2.85+7½¢h	2.87½+5¢m	3.025+7½¢h	3.25+15¢s	1.55	1.55
New York	4.25+37¢hv	3.75+30¢hv	4.15+ 24¢z	4.00+32¢v	4.00+50¢d	3.65+40¢ef	3.95+35½¢bb	2.65+21¢F	2.65+21¢F
Philadelphia	3.75+17¢f	3.385	3.80+18¢f	3.15½/3.90½+10¢d	3.65+15¢C	3.77+15¢cc	4.00+19¢cc	2.25	2.55
Pittsburgh	3.75+17½¢ss	3.40+7½¢h	3.55+10¢cc	3.35+7½¢h	3.45+17½¢ss	4.00+7½¢ss	3.425+7½¢h	2.25+12½¢f	2.25+10¢d
St. Louis	3.75+2½¢f	3.25+7½¢h	3.25+7½¢h	3.325	3.55+7½¢h	3.60+25¢f	3.55+21¢K	2.30+7½¢h	2.30+7½¢h
San Francisco	3.75+36½¢ss	3.25½+20¢cc	3.40+10¢s	2.98+10¢s	3.61+20¢cc	3.37½+23¢U	3.45+46¢K	2.325+10¢s	2.325+10¢s
Seattle	3.55+10¢d	2.94+10¢d	3.25+10¢d	3.13+20¢dd	3.40+10¢d	3.25+19½¢K	3.40+21¢F	2.51+10¢d	2.51+10¢d
Montreal	2.20+16¢t	2.00+16¢t	2.15+16¢t	1.90+15¢t	2.22+18¢t	2.20+18¢t	2.22+18¢t	1.40+10¢t	1.40+10¢t
Toronto	2.66+10¢cc	2.45+10¢cc	2.40+10¢cc	2.55+10¢cc	2.45+18¢cc	2.65+10¢cc	2.44+10¢cc	1.50+8¢cc	1.50+8¢cc

ENR Skilled Average (Bricklayers, Carpenters, Iron workers): $3.407. **ENR Common Average** $2.247

*Cost of living bonus now included in basic wage. †8% fringe benefits. **4% vacation fund. •a 6 hr. day. •b 7 hr. day. •c 5% vac. stamp fund plus 10¢ WF for bricklayers; 4% VF for electricians plus 8¢ WF, 1% PF. •d 10¢ H&WF. •e 10¢ VF. •f 8% WF. •g 11½¢ WF 5¢ apprentice, 2½¢ indus fund. •h $2.85 homes & housing plus 7½¢ WF. •i 17¢ WF. •j 10½¢ hr. WF. •k 7½¢ hr. WF. •l 4% VF. •m 5¢ hr. WF. •n Plus 11% fringe benefits on gross wage ea. yr. •o 10¢ PF. •p 3% WF, 3% PF. •q 10¢ ins: 6% vac. and holiday pay. •r 4% WF and 20¢ PF. •s 5% W&PF, 4% VF, 1% NC, 6PH. •t 7½¢ H&WF. •u 1½% PF. •v 10¢ VF. •w Negotiating. •x 5¢ VP. •y 23¢ WF. •z 5¢ HP. •A 15¢ WF, 15¢ PF, 20¢ BF. •B 7½¢ VP, 5¢ PF, 1½¢ EF. •C 15¢ WF. •D 10¢ H&WF, 5¢ organ. •E 8% WF, plus travel pay per day. •F Plus $4 per day Annuity contrib. •G 3¢ Prom. •H 7¢ WF, 6% VF. •I 15¢ H&WF, 5¢ for Advtg. •J 5% WF, 6 PH, 3% PF. •K 25¢ W&PF, 15¢ VF. •L 3% WF, 3% PF, 2% VF, 1% EF. •M 7½¢ PF. •N 1% WF. •O 10¢ W, 1% NECA. •P10¢ health ins.; 5¢ PF, 5¢ VF. •Q 1 drum, 2 drums 3.40/3.55+10¢. •R 10¢ H&WF, 2¢ admin. and 1¢ apprentice. •S 12½¢ H&WF. •T 21¢ H, W&VF. •U 7½¢ WF, 4% VF, 1% PF. •V 5% WF, 3% PF. •W 2% F •X 12¢ VF, & 7½¢ H&WF. •Y 7¢ H&WF. •Z 9½¢ WF. •aa 7¢ WF, 15¢ PF. •bb 8¢ WF. •cc 25¢ H&WF. •dd 12½¢ WF, 14¢ PF, 5¢ Jt Bd 5¢ Prom% •ee 7½¢ ins. •ff 7½¢ ins. •gg 10¢ ins. •hh 7½¢ H&WF, 5¢ indus. prom.

	Truck drivers 1½ T	—4 cy	+4 cy	Tractor Operators incl. bulldozers 34-49 hp	70-100 hp	100 & over	Tractor scraper 15-16 cy	Power cranes & shovels ½ cy	¾ cy	Motor grader oper	Air comp oper	Air tool oper
Atlanta	$1.75	$	$	$2.525	$2.525	$2.525	$2.525	$3.05	$3.05	$2.525	$2.30	$1.87
Baltimore	1.60+7½¢m	1.75+7½¢m	1.85+7½¢m	2.85/3.30h	2.85/3.30h	2.85/3.30h	2.85/3.30h	3.40/3.55+10¢m	h 3.40/3.55+10¢m	2.85/3.30h	2.85/3.30h	2.25
Birmingham	1.60	1.79ff	2.05ee	2.66	2.66	2.66	2.80	2.80	2.80	2.76	2.385	1.75
Boston	2.195r			3.025d	3.025d	3.025d	3.025d	3.40	3.40	3.40	3.05	2.60+7¢s
Chicago	2.16+12½¢fm			3.00+5¢o	3.15+5¢o	3.20+5¢o*	3.00+5¢o*	3.60+5¢o	3.60+5¢o	3.25+5¢o*	3.10+5¢o*	----
Cincinnati	2.20oo	2.30oo	2.40oo	3.075	3.075	3.075	3.075	3.325	3.325	3.325	3.325	3.325
Cleveland	2.65+10¢m	2.65+10¢m	2.65+10¢m	3.49	3.49	3.49	3.49	3.74	3.74	3.49	3.365	3.365
Dallas	1.55	1.55	1.55	1.55/2.625d	1.55/2.625d	1.55/2.625d	1.55/2.625d	1.55/2.625d	1.55/2.625d	1.55/2.625d	1.55/2.00d	1.70/2.00d
Denver	2.20	2.30	2.45	2.20	2.80	2.80	2.80	2.95	2.95	2.80	2.80	2.40
Detroit	2.45	2.45	2.45	3.30+10¢m	3.30+10¢m	3.30+10¢m	3.30+10¢m	3.30+10¢m	3.30+10¢m	3.30+10¢m	3.025+10¢m	2.68+20¢mm
Kansas City	2.115n	2.115n	2.19n	2.30	2.85n	2.85n	2.85n	3.095	3.095	2.71	2.85n	2.24
Los Angeles	2.405+7½¢n	2.405+7½¢n	2.435+7½¢n	3.05+10¢m	3.05+10¢m	3.05+10¢m	3.30+10¢m	3.30+10¢m	3.30+10¢m	3.30+10¢m	2.54+10¢m	2.51+7½¢n
Minneapolis	2.25	2.25g	2.40i	2.78	3.00r	3.07r	3.00	3.22r	3.48r	2.78	2.67	2.38
New Orleans	1.70	1.95	1.95	2.20+7½¢u	2.85+7½¢u	2.85+7½¢u	2.85+7½¢u	2.85+7½¢u	2.85+7½¢u	2.85+7½¢u	2.20+7½¢u	1.65
New York	2.21aa	2.75+14¢kk	2.75+14¢kk	3.37½+27¢h	3.37½+27¢h	3.37½+27¢h	3.50+28¢h	4.25+34¢h	4.25+34¢h	3.50+28¢h	3.50+28¢h	3.00+15¢cc
Philadelphia	1.925/2.15+7½¢cc			3.15½/3.90½+10¢m			3.15½/3.90½+10¢m	3.15½/3.90½+10¢m		3.15½/3.90½+10¢m	2.97½+10¢m	2.13½+10¢m
Pittsburgh	2.20+7½¢n	2.20+7½¢n	2.20+7½¢n	2.87½+7½¢n	3.20+7½¢n	3.27½+7½¢n	3.025+7½¢n	3.35+7½¢n	3.35+7½¢n	3.25+7½¢n	3.35+7½¢n	2.20+7½¢n
St. Louis	2.30+7½¢mm			3.325hh	3.325hh	3.325hh	3.325hh	3.325hh	3.325hh	3.325hh	2.775hh	2.775hh
San Francisco	2.32½+10¢n	2.32½+10¢n	2.465+10¢	3.095+10¢m	3.095+10¢m	3.095+10¢m	3.095+10¢m	3.425+10¢m	3.425+10¢m	3.255+10¢m	2.705+10¢m	2.425+10¢n
Seattle	2.63+7½¢mm	2.63+7½¢mdd	2.83+7½¢mm	3.10+20¢ll	3.10+20¢ll	3.10+20¢ll	3.10+20¢ll	3.46+20¢ll	3.46+20¢ll	3.19+20¢ll	2.85+20¢ll	2.71+10¢m
Montreal	1.40+11¢ll	1.40+11¢ll	1.40+11¢ll	1.60+15¢ll	1.83+15¢ll	1.83+15¢ll	1.83+15¢ll	2.09+16¢ll	2.09+16¢ll	1.83+15¢ll	1.70+15¢ll	1.70+15¢ll
Toronto	1.60+8¢cc	1.60+8¢cc	1.60+8¢cc	1.95+10¢cc	2.05+10¢cc	2.05+10¢cc	2.05+10¢cc	2.55+16¢cc	2.55+16¢cc	----	2.10+8¢cc	2.10+8¢cc

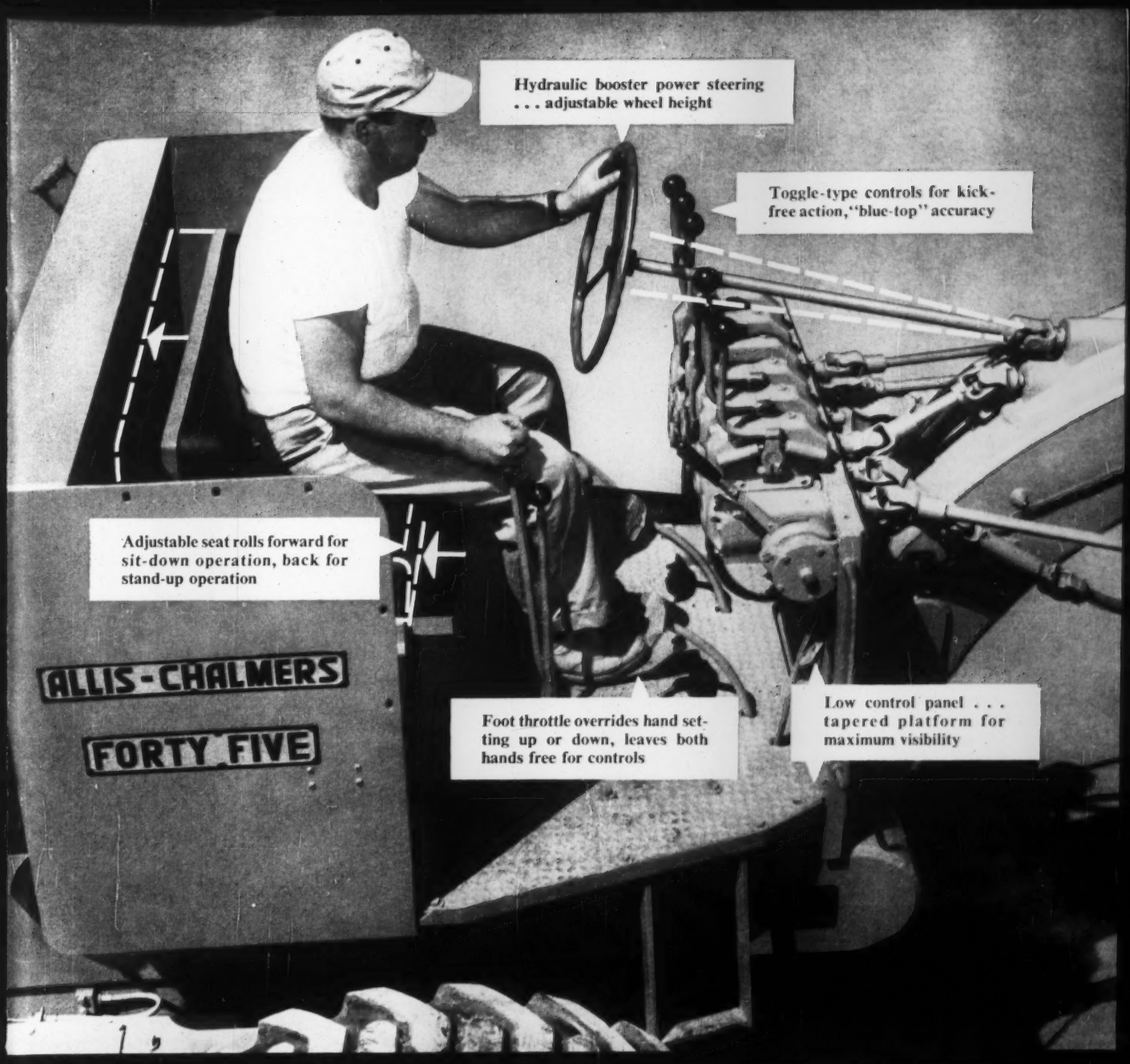
•a 5¢ hr. H&WF •b lower rates, straight time, other broken •c 2-axle; 10-wheel $2.25; Euclid $2.45 •d Intermediate •e bldg constr: highway $2.45+7¢WF •f less than 2-T •g up to 6 cy •h 4% WF, 4% PF •i 6-8 cy •j plus $2 pd by employer for hosp. death benefits to family •k bldg constr; steel constr $3.475 •l higher rates are union, other taken from min wage scale approved byCounty Commissioners Court •m 10¢ H&WF •n flatbed •o under 10 cy •p over10 cy •q over 50 hp •r blade grader •t single •u 7½¢ H&WF •v cat oper •w up to 3½ cy •x 3½ cy & over •aa plus W & PF •bb 3% WF, 2% PF, 11PH •dd up to 5 cy •ee 5 cy & over •ff over 1½ T but not over 3 •gg up to 5 tons •hh excavating •ii 4% VF •kk 7½¢ WF included in base pay •ll 8% fringe benefits •mm 10¢ H&WF, 10¢ insurance •nn 8 cy or less; 8-16 cy $2.90; 16-25 cy $3.15 •oo Plus $2.25 wk WF •rr 12¢ WF •ss 5% WF •tt 10¢ H&WF, 10¢ PF * Retroactive 1/1/57.

MEXICO CITY PRICES

In Pesos, F.o.b. City		Mar. '57	Apr. '57
Common Wages—Building (8 hr. day) (Peons)	av. per hr.	1.38	1.38
Common Wages—Heavy Const. (8 hr. day) (Peons)	av. per hr.	1.38	1.38
Skilled Labor Wages			
Carpenters (8 hr. day) 1 cl.	av. per hr.	2.48	2.48
Bricklayers (8 hr. day) 1 cl.	av. per hr.	2.48	2.48
Struct. Iron Workers (8 hr. day) Remachadores.	av. per hr.	3.77	3.77

Struct. Steel, Shapet		Mar. '57	Apr. '57
3"-15" x 12 meters	per metric ton	2100.00#	2100.00#
# fob Monterrey			
Reinf. Steel, Corr. Rods			
⅜" x 11 meters	per ton	2000.00	2000.00
½" x 11 meters	per ton	2000.00	2000.00
⅝" x 11 meters	per ton	2000.00	2000.00
¾" x 11 meters	per ton	2000.00	2000.00
⅞" x 11 meters	per ton	2000.00	2000.00
1" x 11 meters	per ton	2000.00	2000.00

Gravel truck load at 3½ cu. meters		Mar. '57	Apr. '57
Blue Gravel	per tr. load	75.00	75.00
Rose Gravel	per tr. load	73.00	73.00
Cement, Std. Port. (Tolteca)	per ton	240.00	240.00
Lumber			
1" Pine	per M ft.	1400.00	1400.00
1½" Pine	per M ft.	1650.00	1650.00


Hydraulic booster power steering . . . adjustable wheel height
Toggle-type controls for kick-free action, "blue-top" accuracy
Adjustable seat rolls forward for sit-down operation, back for stand-up operation
ALLIS-CHALMERS
FORTY FIVE
Foot throttle overrides hand setting up or down, leaves both hands free for controls
Low control panel . . . tapered platform for maximum visibility

FIVE WAYS YOU CAN BOOST GRADER PRODUCTION

. . . through operator comfort and control!

Features like these make satisfied operators . . . mean more production for you. They're yours in an Allis-Chalmers FORTY FIVE — 120 brake hp, 23,800 lb. Allis-Chalmers, Construction Machinery Division, Milwaukee 1, Wisconsin.

ALLIS-CHALMERS *Engineering in Action*

Bids Asked—Low Bidders—Contracts Awarded—First Section—

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 36, N. Y., ELSIE EAVES, Manager
J. A. MAHONEY, M. WETZEL, M. E. SCIORRA, F. S. DEMBEK, Reports.
J. H. WEBBER, M. R. ROESSLER, E. R. HUBER, Statistics.

NEW ENGLAND

HEAVY CONSTRUCTION—BA

† Mass., Weymouth—AIR CONTROL FACILITY—BA 5/7—Dist. P. Wks. Office, IND, 495 Summer St., Boston, Zone 10, marine air control facility, Naval Air Station, South Weymouth, NBy 11142, Spec. 11142/57. CD 9/13/51.

▲† Massachusetts—BA On Or About 5/22—U. S. Eng., 150 Causeway St., Boston flood control proj. 3 mi. south of Worcester, Auburn and Millbury, CIVENG-19-016-57-80. $4,000,000-$5,000,000. Justin & Courtney, 121 South Broad St., Phila., Pa., engrs. CD 4/8.

BUILDINGS—BA

▲ Conn., Orange—TERMINAL, etc.—BA 5/7—Adley Express Co., Inc., 216 Crown St., New Haven, 70,000 sq. ft. motor truck terminal bldg. and 60,000 sq. ft. maintenance bldg., Bull Hill Lane. $1,500,000. Leo F. Caproni, 132 Temple St., New Haven, archt.-engr. CD 11/9/56, under Conn., New Haven.

▲ Mass., Boston—SCHOOL—BA 5/9—City, Dpt. School Bldg., 26 Norman St., elementary school, Rice Franklin Dist. $1,770,000. Plans deposit $100, refundable. Thomas F. McDonough, 25 Huntington Ave., Boston, archt. CD 9/28/55.

▲ Mass., Stoughton—HOSPITAL—BA 5/9—Goddard Memorial Hospital, 129 W. Elm St., Brockton, masonry hospital, New Summer St. $1,000,000. Aisner & Atwood, 10 Newbury St., Boston, archts. CD 3/27.

▲ Mass., Swampscott—SCHOOL—BA 5/10—Town, Senior High School, off Forest Ave. $1,270,000. Plans deposit $75, refundable. Warren H. Ashley, 967 Farmington Ave., West Hartford, Conn., archt. CD 9/21/56.

Conn., Naugatuck—HOUSING—BA 5/14—Naugatuck Housing Auth., 16 Ida St., Proj. MR-61, eight buildings, 32 units, moderate rental housing, Lewis Meadows. $605,000. Plans deposit $50. Henry Moeckel & Son, 35 Hillcrest Ave., archts. CD 11/13.

BUILDINGS—SLC

Conn., New Haven—CHURCH, etc.—St. Michael's Ukranian Catholic Church, 123 Park St., soon lets contract church, school and parish hall, 563 George St., $350,000. Julian K. Jastremsky, 135 E. 65th St., New York, N. Y., archt. Youngson & Ciampa, 140 Cedar St., New York, N. Y., engrs.

Me., Presque Isle—RAILROAD STATION—Samuel W. Porvu, 209 Washington St., Boston, Mass., soon lets contract, railroad station, $500,000. Herman Feer & William E. Nast, 27 School St., Boston, Mass., archts. Bangor & Aroostock R.R. Co., 84 Harlow St., Bangor, Me., lessee. CD 1/9.

HEAVY CONSTRUCTION—LB & CA

▲ CONNECTICUT—State Hy. Dpt., 165 Capitol Ave., Hartford,

W. J. Barney Corp., 101 Park Ave., New York, N. Y., LB $1,048,850. (4 bidders) Group E, towns of East Lyme, Norwich, Route 82, Norwich, Route 97 Plainfield (Plainfield Pike) Plainfield Squaw Rock Road), 5 maintenance garages, incl. salt storage bldgs., jet sander bldg., parking areas ramps, drives, pump islands, retaining walls, fences, gates, site imprv., site utilities, exterior lighting, landscaping, etc. Bids Apr. 18.

▲ CONNECTICUT—State Hy. Dpt., 165 Capitol Ave., Hartford,

Conn.—Associated Constr. Co., 1010 Wethersfield Ave., Hartford, Conn., LB $1,755,000 (only bidder) combined bid Conn. Turnpike Proj. 326-06 and 329-05 dual service stations, incl. site imprvs., site utilities landscaping, exterior lighting, product piping, tanks, pump and related work in towns of Montville and Plainfield. LB $919,000 (3 bidders) Proj. 326-06, only in town of Montville;

Conn.—Enfield Road Constr. Co., Inc., Depot Hill, Warehouse Point, Conn., LB $819,000 (4 bidders) Proj. 329-05 only in Town of Plainfield. Bids Apr. 18. CD 3/27.

BUILDINGS—LB & CA

F. W. Cunningham & Sons, 180 State St., Portland, Me. LB $426,000. HOSPITAL, YORK VILLAGE, ME. York Hospital, Roy W. Sturtevant, pres. Directors, York, Me. Bids Apr. 12. CD 3/20.

●Bryan Constr. Co., Inc., 24 Prospect St., Brattleboro, Vt., LB $476,448. MUTUAL AID BLDG., BRATTLEBORO, VT. The Brattleboro Mutual Aid Assoc., Inc., 9 Harris Pl., Brattleboro, Vt. Bids Apr. 12. CD 4/9.

Wright & Morrissey, Inc., 263 S. Champlain St., Burlington, Vt., CA $591,222, est. $600,000. REHABILITATION CENTER and BOILER and LAUNDRY BLDG., BURLINGTON, VT. DeGoesbriand Memorial Hospital, 115 Colchester Ave., Burlington, Vt. CD 4/9, under LB.

Hall Brothers Co., 10 S. Main St., Randolph, Vt., LB $404,878, Alt. No. 1, $3,383, Alt. No. 2, $10,369, Alt. No. 3 $530, Alt. No. 4, $2,960. JUNIOR-SENIOR HIGH SCHOOL, Main St., DERBY VT. Derby Academy, Main St., Derby, Vt. Bids Apr. 18. CD 4/11.

▲ Daniel O'Connell's Sons, Inc., 480 Hampden St., Holyoke, Mass. CA $1,510,618. REGIONAL HIGH SCHOOL, Main St., ATHOL, MASS. Athol, Royalton Regional School Dist., supt. Schools, Town Hall, Athol, Mass. CD 3/18, under LB.

Sciaba & Co., Inc., 86 Shawmut Ave., Boston, Mass. CA $647,086. Elementary SCHOOL Henry Grew site, Hyde Park, BOSTON, MASS. City, Dpt. School Bldgs., 26 Norman St., Boston, Mass. CD 3/26, under LB.

▲ Vara Constr., Inc., 718 Huntington Ave., Boston, Mass. LB $1,965,000. HIGH SCHOOL, CHELMSFORD, MASS. Town, School Bldg. Comm., 50 Billerica St., Chelmsford, Mass. Bids Apr. 17. CD 3/12.

G. Bonazzoli & Sons Co., Washington St., Hudson, Mass. Owner Builds. $500,000. RESIDENTIAL AND INDUSTRIAL DEVELOPMENT, approx. 200 acres, HUDSON, MASS. Tekton Assocs., Inc., 23 Washington St., Natick, Mass., engr.

Town, Town Hall, Randolph, Mass., rejected bids Jan. 22, ELEMENTARY SCHOOL, Liberty St., RANDOLPH, MASS. LB $909,000. CD 1/30, under LB.

E. Turgeon Constr. Co., Inc., 42 Weybosset St., Providence, R. I., CA $360,609. parochial SCHOOL, WEST WARWICK, R. I. St. John the Baptist Roman Catholic Church, c/o Most Rev. Russell J. McVinney, bishop, Providence Diocese, Fenner St., Providence, R. I. Bids Apr. 2. CD 3/20.

▲ Swanson-Janson Co., 82 Foster St., Worcester, Mass. CA Approx. $2,000,000. CENTER SERVICE BLDG., New Bond and C Sts., WORCESTER, MASS. Norton Co., 1 New Bond St., Worcester, Mass. CD 3/19, under LB.

▲ Baltimore Constr. Co., 711 South Central Ave., Baltimore, Md., LB $1,217,000, est. $1,170,000. HIGH SCHOOL, GUILFORD, CONN. School Bldg. Com., Town Hall, Guilford, Conn. Bids Mar. 26. CD 2/26.

▲ Town, Town Hall, Hamden, Conn., cancelled bids to have been opened Apr. 15, JUNIOR HIGH SCHOOL, Washington Ave., HAMDEN, CONN., Est. $2,400,000. CD 3/28.

▲ Baltimore Contractors, Inc., 711 South Central Ave., Baltimore, Md., LB $4,748,400 (4 bidders) intensive TREATMENT BLDG., Conn. State Hospital, MIDDLETOWN, CONN. State P. Wks. Dpt., 165 Capitol Ave., Hartford, Conn. Bids Apr. 17. CD 3/22.

▲ Benjamin F. Shaw Co., 2 and Lombard Sts., Wilmington, Del., CA $4,233,312. Sch. 3, RADIATOR LABORATORY for Conn. Aircraft Nuclear Engine Laboratory, ENG-5085, MIDDLETOWN, CONN. U. S. Eng., 150 Causeway St., Boston, Mass. CD 1/11/55;
O. G. Kelly & Co., 98 Taylor St., Boston, Mass., CA $440,000. furnishing, del., erecting 1 test chamber for radiator laboratory, ENG-5088 (Middletown, Conn.).

I. R. Stich Assocs., Inc., 611 New Park Ave., West Hartford, Conn. Owner Builds. $759,750. 50 HOUSES, Hilltop Estates, Griffin Rd., SOUTH WINDSOR, CONN.

▲ Glenwood Homes, Inc., 750 Main St., Hartford, Conn., Owner Builds, $3,674,500. 165 HOUSES, "Sherwood Hills" Portage Rd., WEST HARTFORD, CONN. CD 6/22.

PROJECTS COVERED

By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $44,000; other public works $73,000; industrial buildings $93,000; other buildings $344,000. Also Foreign projects of $100,000 and more in size of interest to American contractors.

By Regions & Classes of Construction
(In order of Listing)

BIDS ASKED
LOW BIDDERS
CONTRACTS AWARDED

New England
Middle Atlantic
South
Middle West
West of Mississippi
Far West

PROPOSED WORK

Water Supply
Sewers, Waste Disposal
Bridges
Streets & Roads
Earthwork, Waterways
Public Buildings
Mass Housing
Commercial Buildings
Industrial Buildings
Unclassified

In These Stages

PROPOSED WORK: Before and including appointment of engineers or architects.
BIDS ASKED: BA (new announcements only). For full calendar, see also preceding issues.
SOON LETS CONTRACT: SLC
LOW BIDDERS: LB On jobs below $500,000 in value all low bidder news will be the final reports published on the projects involved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.
CONTRACTS AWARDED: CA Except awards to low bidders previously reported in low bidder stage.
CD dates shown are of Construction Daily Issue in which last previous report was published.
OWNERS, ENGINEERS, ARCHITECTS, CONTRACTORS are invited to report their new jobs for listing in these reports when they meet or exceed the size minimums shown above. Address these news releases to J. A. Mahoney, REPORTS, ENGINEERING NEWS-RECORD, 330 W. 42 St., New York 36, N. Y.

Symbols and Abbreviations Include:

† Federal Government
▲ Project of $1,000,000 or over.
ENR Engineering News-Record
CD Construction Daily
For additional reports see Construction Daily.

MIDDLE ATLANTIC

BUILDINGS—BA

▲ Pa., Horsham—SCHOOL—BA 5/9—Hatboro-Horsham Joint Bd. Educ., Horsham, Junior High School and athletic field, sewage disposal sys. $2,500,000, Wigmore & Gilfillen, 117 S. 17 St., Phila., archts. CD 10/26/55.

Pa., New Castle—SCHOOL—BA 5/14—Pub. School Bldg. Auth., 101 S. 25 St., Harrisburg, secondary school for Joint School Bd. of Laurel, Lawrence Co. Plans deposit $50. The Thayer Co., Greer Bldg., archt. CD 3/8/56.

Pa., Jeannette—SCHOOL—BA 5/16—Pub. School Bldg. Auth., 101 S. 25 St., Harrisburg, Senior High School, for Jeannette School Bd. Plans deposit $50. Sorber & Hoone, First National Bank Bldg., Greensburg, archts. CD 2/25/55.

Pa., Thorndale—SCHOOL—BA 5/23—Brandywine Area Joint School Auth., Thorndale, Junior High School, well, parking area, Ercildowne, $502,997, Hunter Campbell & Rea, 3601 Fifth Ave., Altoona, archts.

HEAVY CONSTRUCTION—LB & CA

† Braverman Constr. Co., Inc., 16 Court St., Brooklyn 2, N. Y. LB $413,930 (10 bidders) U. S. A. R. Training Center Queens, ENG-30-075-57-362, NEW YORK. U. S. Eng., 111 E. 16 St., New York 3, N. Y. CD 3/12.

Elmhurst Contg. Co., 53-09 97 Place, Corona, L. I., N. Y. CA $720,523, est. $720,000. Olean Airport constr., OLEAN, N. Y. City, Olean, N. Y. Awarded Apr. 9.

† Zephyr Constr. Co., 7412 New Utrecht Ave., Brooklyn 4 N. Y. LB $606,585. addnl. storage facilities for ordnance storage area, Suffolk County Air Force Base, ENG-30-075-57-303, WESTHAMPTON BEACH, N. Y. U. S. Eng., 111 E. 16 St., New York 3, N. Y. CD 3/13.

▲ NEW JERSEY—State Hy. Dpt., State Hy. Office Bldg., 1035 Parkway, Trenton. Bids opened 4/16.

N. J.—P. Michelotti & Sons, Inc., 151 Midland Ave., Sadle Brook, N. J. LB $867,805 (8 bidders). constr. 4 mi. Forest Ave. from State Hy. Rte. 4 to Westwood boro line in the boros of Paramus, Oradell and Emerson, Bergen Co.;

N. J.—A. J. Cunningham & Sons, 370 Newkirk Ave. Trenton, N. J. LB $202,413 (2 bidders) wid'n., resurf. Rte. 69 Section 2B from Bull Run Rd. to Bennington Circle 1.15 mi., Hopewell Twp., Mercer Co.;

N. J.—Marsellis-Warner Corp., 10 Baldwin St. Montclair, N. J. LB $133,304 (7 bidders) constr. 1.382 mi Meisel Ave. from South Springfield to Morris Aves., Springfield Twp., Union Co. CD 3/29.

▲ Hunkin-Conkey Constr. Co., 1740 E. 12 St., Cleveland, O. CA $1,645,081, constr. dam and reservoir on Dyberry Creek, near Honesdale Lackawaxen River, Wayne Co., PENNSYLVANIA. U. S. Eng., 2635 Abbottsford Ave., Phila. 29, Pa. CD 2/8, under LB.

Andrew R. Palombo Co., 230 Auburn St., Pittsburgh 6, Pa. CA $523,405. Contr. D, McLaughlin Run Watershed collecting sewers, BETHEL, PA. Municipal Auth., Boro of Bethel, Allegheny Co., Bethel, Pa. Bids Jan. 24. CD 1/8.

Fort Pitt Asphalt Co., 1411 Nixon St., Pittsburgh 33, Pa. LB $799,000. Contr. G, Pine Fork Watershed collecting sewers, BETHEL, PA. Municipal Auth. of Boro of Bethel, Allegheny Co., Bethel, Pa. Bids Mar. 28. CD 3/7.

McShane Contg. Co., 1007 McCartney St., Pittsburgh 20, Pa. CA $587,890. Contr. F, Piney Fork Watershed collecting sewers, BETHEL, PA. Municipal Auth. of Boro of Bethel, Allegheny Co., Bethel, Pa. Bids Mar. 7. CD 2/25.

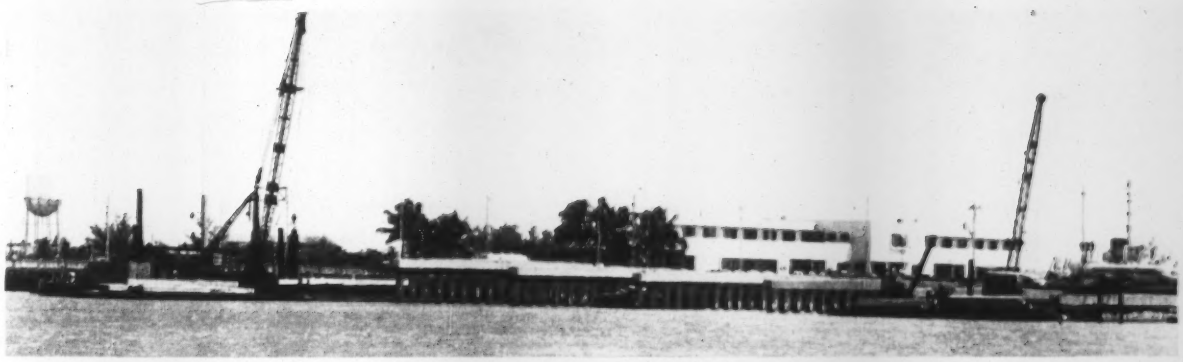
MARYLAND—State Rds. Comn., 108 E. Lexington St., Baltimore, Zone 2,

Empire Constr. Co., 31 S. Calvert St., Baltimore 2, Md. CA $766,690. 4 span steel girder bridge to carry Rte. 58 over Hagerstown By-Pass and dual 5 span steel girder bridge on By-Pass over U. S. Rte. 40, Contr. W 446-4-620 and W 446-13-620, Washington Co. CD 4/2, under LB.

MARYLAND—State Rds. Comn., 108 E. Lexington St., Baltimore, Zone 2,

McGuire & Rolfe, Inc., 1401 First St. S. E., Wash., D. C. CA $693,457. relocation, surf. 8.485 mi. State Rte. 235, near Lexington Park, Contr. SM 309-1-520 and SM-309-3-520, St. Marys Co. CD 1/31, under LB.

(Continued on page 84)



POWERED BY A JAEGER "600" ROTARY, a Ka-Mo auger rig drilled holes for 700 twenty-inch square pre-cast concrete piles supporting the new causeway bridge across Biscayne Bay between Miami and Miami Beach. Powell Brothers, Ft. Lauderdale, contractor.

DOUBLE TEAMED TO SPEED JOB PROGRESS: Jaeger "600" Rotary powers 18 h.p. Ka-Mo auger drilling 24" holes for 50' to 60' utility poles of the Florida Keys Electric Cooperative. Equipment was trailer mounted to move quickly from pole structure to structure. (More than 700 were installed). All types of strata were encountered in 33 miles between Homestead and Tavernier, Fla., ranging from submerged coral rock to muck. J. K. Sims, sub-contractor, under Leo T. Barber, contractor, both of Moultrie, Ga.

Jaeger-powered drill beats pile driving 8 to 1

On two projects along Florida's Gold Coast, the combination of a Jaeger "600" rotary air compressor and Ka-Mo drill cut difficult pile and pole setting jobs down to size. On both the Florida Keys job shown above and the McArthur Causeway bridge project between Miami and Miami Beach, much of the drilling was in "iron-hard" coral rock, 8' to 10' under water. In a test run for the contractor, Jaeger air easily powered the 24" drill 16' into dry limerock in one hour, saving 7 of the 8 hours previously found necessary to drive a pile into this formation.

The higher efficiency of Jaeger Roto Air Plus® units really cuts your operating and maintenance costs. For example, at full load speed, the Model 6-71 GM diesel engine of a Jaeger "600" runs at only 1650 rpm (100 to 150 rpm slower than other "600" rotaries). This slower, more efficient operation saves fuel, reduces engine piston travel and cuts compressor work as much as 9000 revolutions per hour.

Other Jaeger rotaries (125, 250 and 365 cfm) have this same fuel-saving, wear-saving, high-efficiency performance. See your Jaeger distributor for full details or demonstration — or let us send you Catalog JCR-5.

THE JAEGER MACHINE COMPANY

200 Dublin Avenue, Columbus 16, Ohio

PUMPS • CONCRETE MIXERS • SPREADERS • FINISHERS • TRUCK MIXERS

(Continued from page 82)

▲ **MARYLAND**—State Rds. Comn., 108 E. Lexington St., Baltimore, Zone 2.

M. J. Grove Lime Co., Lime Kiln, Md. CA **$1,242,024**. relocation, surf. 6.25 mi. State Rte. 418 and S. R. 64, Leiterburg and Ringold; Contr. W 442-1-620, Washington Co. CD 1/22, under LB.

▲† **Wertheimer Constr. Co.**, President Washington Bldg., Arlington Towers, Arlington, Va. CA **$1,303,380**, four airmen's dormitories, Andrews Air Force Base, ENG-49-080-57-61-(60), ANDREWS AIR FORCE BASE, MD. U. S. Eng., First and Douglas Sts. N.W., Wash. 25, D. C. Bids Mar. 26. CD 3/7.

Square Constr. Co., 1155 S. Haven St., Baltimore, Md., CA **$590,125**, low level gravity sewer, U. S. Senate Office Bldg. vicinity of Constitution Ave. and 1 St. N.E., WASH., D. C. D. C. Govt. Dpt. Sanitary Eng. 499 Pa. Ave. N.W., Wash., D. C. Bids Mar. 22, awarded Apr. 15. CD 3/29, under LB.

Young & Crary, Inc., 1312 62 Ave., Hillside, Md., LB **$427,455**. (11 bidders) Military Road Underpass, 16 St. N. W., WASH., D. C. Dpt. Hys. 449 Pa. Ave. N. W., Wash., D. C. Bids Apr. 16. CD 3/21.

BUILDINGS—LB & CA

Crown Haven Homes, c/o Henry A. Klar Realty Co., 220-02 Horace Harding Blvd., Bayside Hills, N. Y. Owner Builds. **$400,000**. 20 HOUSES on tract on Legion St. near Merrick Rd., BELLMORE, N. Y.

Frank W. O'Connell, Inc., 329 Water St., Binghamton, N. Y. CA **$744,584**. general constr. BUILDING addn., alteration, BINGHAMTON, N. Y. Sheltered Workshop for the Disabled, Inc., 20 Court St., Binghamton, N. Y. CD 3/5, under LB.

▲ **State Dormitory Auth.**, 55 Grant Ave., Albany, N. Y. rejected bids Feb. 15, two DORMITORIES, State Teachers College, Water St. and Broadway, CORTLAND, N. Y. LB **$1,187,852**. CD 3/11, under LB.

Forest Estates Homes, c/o Albert B. Meklenburg Org., 1038 Northern Blvd., Roslyn, N. Y. Owner Builds. **$420,000**. 15 HOUSES, Northern Blvd. and Sugar Toms Lane, EAST NORWICH, N. Y.

Morewood Homes, c/o Albert B. Meklenburg Org., 1038 Northern Blvd., Roslyn, N. Y. Owner Builds. **$440,000**. 20 HOUSES on tract at Park Ave. near Rte. 25A, HUNTINGTON, N. Y.

Hunting-Wood Estates, c/o Albert B. Meklenburg Org., Inc., 1038 Northern Blvd., Roslyn, N. Y. Owner Builds. **$400,000**. 25 HOUSES on tract on Kelsey Ave., HUNTINGTON, N. Y.

▲ **John Kennedy & Co., Inc.**, 205 E. 42 St., New York, N. Y. CA **$1,344,550**. Herrick HIGH SCHOOL, NEW HYDE PARK, N. Y. Bd. Educ., Union Free School Dist. No. 9, Herricks School, New Hyde Park, N. Y. CD 4/2, under LB.

Carl Manor Homes, c/o Albert B. Meklenburg Org., 1038 Northern Blvd., Roslyn, N. Y. Owner Builds. **$400,000**. 15 HOUSES on West Carl Ave., NORTH BALDWIN, N. Y.

▲ **Lakeville Estates**, c/o Samuel Paul, archt., 89-51 164 St., Jamaica 3, N. Y. Owner Builds. **$6,000,000**. 350 HOUSES, on tract at Old Country Rd. east of South Oyster Bay Rd., PLAINVIEW, N. Y.

Wm. E. Bouley Co., Inc., 265 W. Genesee St., Auburn, N. Y. LB **$762,998**. (5 bidders) general constr. 2 story brick HOSPITAL, WATERLOO, N. Y. Taylor-Brown Memorial Hospital, Waterloo, N. Y. Bids Apr. 15. CD 3/29.

Abroe Builders, Rte. 46, Clifton, N. J. Owner Builds. **$550,000**. 22 HOUSES at Garden State Parkway and Huemmer Terrace to be known as Broadview Gardens, CLIFTON, N. J. Roche & Roche, 234 W. 44 St., New York 36, N. Y. archts.

▲ **Alvin Obal**, 1161 Midland Ave., Garfield, N. J. Owner Builds. **$1,500,000**. 45 HOUSES, Grove St. to be known as Grove Hills Estates, CLIFTON, N. J. Irwin Gerber, 11 Commerce St., Newark, N. J., and R. Novak, 89 Central Ave., Clifton, N. J., archts.

Abroe Builders, Rte. 46, Clifton, N. J. Owner Builds. **$800,000**. 25 addnl. HOUSES on new tract adjoining and forming second sect. of Lexington Estates, Lexington Ave., CRANFORD, N. J. Roche & Roche, Rte. 46, Clifton, N. J., archts.

John D. Lawrence, Westville, N. J. CA **$663,636**. CHURCH and MANSE addn., alterations, HADDONFIELD, N. J. Haddonfield Methodist Church, 29 Warwick Rd., Haddonfield, N. J. Bids Mar. 15. CD 3/14.

▲ **Hobart Development Co.**, Box 535, Livingston, N. J. Owner Builds. **$3,200,000**. 105 HOUSES to be known as Wychwood on Wychwood Place off Amherst Ave., LIVINGSTON, N. J. Percy M. Ivory, 1087 Springfield Ave., Irvington, N. J., archt.

J. Singer & Sons and Nat. Leher, Kings Hy. at Rte. 35, Middletown, N. J. Owner Builds. **$550,000**. 27 HOUSES, Kings Hy. to be known as Esquire Estate, MIDDLETOWN, N. J. Geo. Vuinovich, 624 E. Palisade Ave., Englewood Cliffs, N. J., archt.

▲ **American Land Investment Co.**, Drum Point Rd., Osbornville, N. J. Owner Builds. **$4,500,000**. 200 HOUSES, dredging, building lagoons, etc. for development to be known as Baywood, on Barnegat, OSBORNVILLE, N. J. Thomas Carr, 479 Brace Ave., Perth Amboy, N. J., engr.

▲ **Tandy & Allen**, 280 Hackensack Ave., Hackensack, N. J. CA **$1,000,000**. 1 story, bsmnt., 175,000 sq. ft. STORE, parking facilities, 21 acre tract, Rte. 17 and Midland Ave., PARAMUS, N. J. E. J. Korvette, Inc., 12 E. 46 St., New York, N. Y. Resnick & Green, 1 W. 75 St., New York, N. Y., archts.

▲ **Alan Molner**, 248 Grant Ave., Rutherford, N. J. Owner Builds. **$1,000,000**. 45 HOUSES, Ringwood Ave. to be known as Oak Hill Estates, POMPTON LAKES, N. J.

Harry Wils, West Bound Homes, Inc., Shawnee and Hatfield Rds., Scotch Plains, N. J. Owner Builds. **$800,000**. 32 HOMES, South Mertine Ave. opposite North Broad St. to be known as Essex Farms, SCOTCH PLAINS, N. J. Herbert Southern, Irving St., Rahway, N. J., archt.

▲ **Albert A. Chmiel**, 751 Bunker Hill Ave., Trenton, N. J. Separate Contracts. **$1,000,000**. RESIDENTIAL DEVELOPMENT, 50 units, Doria Estates, TRENTON, N. J.

Melvin Konwiser & Herbert Granich, 256 Pembrook Rd., Mountainside, N. J. Owner Builds. **$850,000**. 38 HOUSES, Galloping Hill Rd. to be known as Salem Ridge, UNION, N. J. Irwin Gerber, 11 Commerce St., Newark, N. J., archt.

▲ **W. J. Happel & Co.**, 936 Stuyvesant Ave., Union, N. J. Owner Builds. **$1,650,000**. 55 HOUSES, Pleasant Valley Way to be known as Essex County Club Estates, WEST ORANGE, N. J. Louis Steuber, 2092 Morris Ave., Union, N. J., archt.

▲ **United Engineers & Constructors, Inc.**, 1401 Arch St., Phila., Pa. CA Est. **$33,000,000**. design and construct, expanding steel PLANT, incl. 100 ton electric furnace, ingot and slab soaking pits, four-high 140 in. breakdown mill, COATESVILLE, PA. Lukens Steel Co., Coatesville, Pa.

▲ **Philip Vizzini & Son**, 818 N. Franklintown Rd., Baltimore, Md. CA **$1,353,600**. Mount Royal Elementary SCHOOL, BALTIMORE, MD. City Bureau Bldg. Constr., 410 Municipal Bldg., Baltimore 2, Md. CD 4/12, under LB.

▲ **American Constr. Co.**, 261 Constitution Ave., N. W., Wash., D. C., CA **$2,588,600**. Casualty HOSPITAL addn., alterations, 708 Mass. Ave. N. E., WASH., D. C. Casualty Hospital, 708 Massachusetts Ave., N. E., Wash., D. C. Bids Mar. 20, awarded Apr. 16. CD 3/22, under LB.

SOUTH

HEAVY CONSTRUCTION—BA

† **La., Alexandra**—SWIMMING POOL—BA 5/22—U. S. Eng., P.O. Box 867, Little Rock, Ark., 750-817 swimming pool, Officer FY 56, England Air Force Base. $100,000-$500,000. CD 8/24/56.

BUILDINGS—BA

Ky., Newport—HOUSING—BA 5/22—Newport Municipal Housing Comn., Fourth and York Sts., seven 2 story bldgs., 50 housing units, Isabella St. $600,000. Plans deposit $50, Meriwether-Mayre & Assoc., Short St., Lexington, archts. Proctor & Ingels, 18 E. Fourth St., Cincinnati, O., engrs. CD 4/16, under LB.

† **Fla., Panama City**—DISPENSARY—BA 5/28—Dist. P. Wks. Office, Building No. 13, U. S. Naval Base, Charleston, S. C., dispensary, U. S. Navy Mine Defense Laboratory, NBy-5670, Spec. 5670/56.

HEAVY CONSTRUCTION—LB & CA

▲† **Rogers & McGrath, Inc.**, 1221 Kenilworth Ave. N.E., Wash., D. C. LB **$2,430,000**. compressor and drive system, LANGLEY FIELD, VA. National Advisory Comm. for Aeronautics, Langley Field, Va. Bids Apr. 3. CD 9/11/52.

▲ **NORTH CAROLINA**—State Hy. & P. Wks. Comn., Raleigh,

N. C.—**H. R. Stewart & Co.**, Box 88, Charlotte, N. C., CA **$529,654**. grading, CABC 3.41 mi. 0-702, FH 32-H, Hayward, Transylvania and Jackson Counties;

N. C.—**Wilkes Eng. Co.**, North Wilkesboro, N. C., CA **$698,788**. grading 8.495 mi. relocation of U.S. 64 and 70 6251-I-700 (1L) Catawba Co. Bids Mar. 26. CD 4/1, under LB.

▲ **NORTH CAROLINA**—State Hy. & P. Wks. Comn., Raleigh,

N. C.—**Boyd & Goforth, Inc.**, Box 10436, Charlotte, N. C., CA **$517,646**. bridge, approaches 0.801 mi. over Roanoke River on N. C. 48, 1379 S-578 (1), US 587 (2), Halifax and Northampton Counties;

N. C.—**John H. Brinkley**, 936 Cowper Dr., Raleigh, N. C. CA **$634,289**. structures 8.495 mi. relocation U.S. 64 and 70, 6251 I 700 (11) Catawba Co. Bids Mar. 26. CD 4/1, under LB.

E. K. **Aldridge & Sons**, Athens, Ga. CA **$402,655**. natural gas distr. sys., Chester Co., SOUTH CAROLINA. Chester County Natural Gas Auth., Chester, S. C. Porter, Barry & Assocs., 1730 Main St., Baton Rouge, La., engrs.

† **Arundel Corp.**, Pier 2, Pratt St., Baltimore, Md., CA **$849,225**. placement of hydraulic fill in channel contraction dikes in Charleston Harbor, No. 38-081-57-10; SOUTH CAROLINA, U.S. Eng., Custom House, Charleston, S. C. Bids Apr. 4, CD 4/11, under LB.

† **Ballenger Paving Co.**, Paris, S. C., LB **$949,139**. paving operational airfield apron, Donaldson Air Force Base, No. 38-081-57-26, GREENVILLE, S. C. U. S. Eng., Customhouse, Charleston, S. C. Bids Mar. 27. CD 2/20.

▲† **Ballenger Paving Co.**, Box 927, Greenville, S. C., CA **$1,292,578**. taxiway realignment for Dpt. Air Force, DAWSONVILLE, GA. Lockheed Aircraft Corp., Marietta, Ga. Bids Mar. 5. CD 3/12, under LB.

▲ **FLORIDA**—State Road Dpt., Tallahassee,

James H. Craggs Constr. Co., Box 22, Gainesville, Fla. CA **$664,729**. limerock base, surf. 6.129 mi. SA A-1-A, Job 8904-103, Martin Co. Bids Feb. 12, awarded Apr. 15. CD 2/18, under LB.

FLORIDA—State Road Dpt., Tallahassee,

H. E. Wolfe Constr. Co., Box 1361, St. Augustine, Fla., CA **$527,831**. concrete box culverts 8,589.80 lin. ft. Cleveland St. in Tampa, Job 1027-103, Hillsborough Co. Bids Mar. 7. CD 3/13, under LB.

▲† **Merritt Dredging Co.**, Box 3049, St. Andrews Branch, Charleston, S. C., CA **$1,166,150**. enlarging channel Intracoastal Waterway, Eau Gallie to Wabasso and dredging Vero Beach Turning Basin, CIVENG-08-123-57-39. FLORIDA, U. S. Eng., P.O. Box 4970 Jacksonville, Fla. Bids Feb. 12. CD 4/4, under LB.

† **Satchwell Electric Constr. Co. Inc.**, 2922 Old St. Augustine Rd., Jacksonville, Fla., CA **$920,808** civilian dining hall, WS-107A and GM instrument (receiver) building Bomarc-Sage, Air Force Missile Test Center, Patrick Air Force Base, ENG-08-123-57-46, COCOA, FLA. U. S. Eng., P.O. Box 4970 Jacksonville, Fla. CD 5/24/49.

▲† **Blount Bros. Constr. Co.**, Bell Bldg., Montgomery, Ala., CA **$3,447,944**. WOMARC-EST facilities, Contract DA-01-076-ENG 3771, EGLIN AIR FORCE BASE, FLA. U. S. Eng., 2301 Grant St., Mobile 7, Ala. CD 8/22.

† **MISSISSIPPI**—Bureau P. Rds., Dpt. Commerce, First National Bank Bldg., Florence, Ala., Bids opened 4/12,

Anderson-Gregory Co., Inc., 410 Sudekum Bldg., Nashville, Tenn. LB **$662,142**. (8 bidders) grav. base course, 8.445 mi. from Old Miss. Rte. 8 to Woodland-Montpelier Rd., Natchez Trace Parkway, Proj. 3 F2, Chickasaw Co. CD 3/20.

† **Dick Constr. Co.**, 208 W. Oak St., Louisville, Ky. LB **$738,935**. drawing and reproduction storage facilities, site imprvs., NOy 01290, LOUISVILLE, KY. Bureau Yards & Docks, Pub. Wks. Office, Fifth Naval Dist. U. S. Naval Base, Norfolk 11, Va. Bids Apr. 16. CD 4/10.

† **Weymouth Constr. Co.**, P.O. Box 319, Memphis, Tenn., CA **$447,015**. aircraft parking apron overlaying and parking lot adjacent to operations area, Naval Air Station, NBy 10269, MEMPHIS, TENN. Dist. P. Wks. Office Bldg. 13, U. S. Naval Base, Charleston, S. C. Bids Mar. 27. CD 3/1.

▲† **Pittsburgh-Des Moines Steel Co.**, Neville Island, Pittsburgh, Pa., CA **$4,595,600**. constr., fabrication removable test section carts, Arnold Engineering Development Center, TULLAHOMA, TENN. U. S. Eng., Box 2091, Tullahoma, Tenn. Bids Mar. 21, awarded Apr. 16. CD 3/29, under LB.

BUILDINGS—LB & CA

Southern Engineering & Constr. Corp., 405 A E. Franklin St., Richmond, Va. LB **$782,700**. John Randolph HOSPITAL, VA-90, HOPEWELL, VA. Hopewell Hospital Auth., Hopewell, Va. Marcellus Wright & Sons, 100 E. Main St., Richmond, Va., archts. CD 4/5/55.

C. L. Lewis, 1306 Stephenson St., Lynchburg, Va. CA **$674,990**. LAUNDRY and STEAM GENERATING PLANT, State Penitentiary Farm, POWHATAN, VA. Commonwealth of Va., Capitol Bldg., Richmond, Va. Bids Mar. 7. CD 3/21, under LB.

▲ **John McShain, Inc.**, 3501 Sinclair Lane, Baltimore, Md. CA **$13,172,000**. (7 bidders) TEACHING HOSPITAL, W. Va. University's Medical Center, MORGANTOWN, W. VA. Bd. Governors West Virginia University, Administration Bldg., Morgantown, W. Va. Bids Apr. 10, awarded Apr. 9. CD 4/16, under LB.

C. T. Wilson Constr. Co., 321 W. Geer St., Durham, N. C. LB **$945,300**. renovating WARD BLDGS., BUTNER, N. C. State Bd. Control, State Capitol, Raleigh, N. C. T. C. Cooke, Snow Bldg., Durham, N. C., engr. Harris & Pyne, Durham, N. C., archts. CD 11/18/53.

▲ **J. A. Jones Constr. Co.**, 133 Ellis St. N. E., Atlanta, Ga., CA **$1,968,000**. SYNAGOGUE and SUNDAY SCHOOL, ATLANTA, GA. Congregation Ahavath Achim, 346 Washington S.W., Atlanta, Ga. Bids Feb. 15, awarded Apr. 12. CD 12/30/54.

▲ **Thompson & Street**, 2622 Piedmont Rd. N. E. Atlanta, Ga., CA **$7,406,000**. STATE FARMERS MARKET 146-acre tract, south of here near intersection of State Rte. 85 and U. S. 41, ATLANTA, GA. State Agriculture Dpt., 19 Hunter St. Atlanta, Ga. Bids Jan. 9, awarded Apr. 11. CD 1/18, under LB.

▲ **Claussen & Webster**, Box 840, Augusta, Ga. LB **$1,045,000**. Regional SHOPPING CENTER, AUGUSTA, GA. Southgate Plaza, Inc., c/o Heery & Heery, archts., 1722 Peachtree St. N.W., Atlanta, Ga. Bids Apr. 9. CD 4/8.

A. B. Newton Co., Box 191, Vidalia, Ga., LB **$734,000**. low-rent HOUSING, GA-59-3 and GA-59-4. GAINESVILLE, GA. Gainesville Housing Auth., Gainesville, Ga. Bids Apr. 11. CD 3/15.

▲ **Hanover Corp.**, 1555 Daytonia Rd., Miami Beach, Fla., CA **$2,000,000**, 14 story, bsmt. 200x179 ft. rein.-con. on concrete piling, Rubalyat HOTEL, swimming pool-Cabanas, Collins Ave. and 96th St., BAL HARBOUR VILLAGE, FLA. Melvin G. Rubel, 1555 Daytonia Rd., Miami, Fla. CD 2/14, under CA.

† **Carr & Rothschild**, 1936 Cleveland Ave., Montgomery, Ala., CA **$565,058**. 31 HOUSING UNITS for officers, ENG-01-076-57-63. FORT RUCKER, ALA. U. S. Eng., 2301 Grant St., Mobile 7, Ala. Bids Feb. 28, CD 3/7, under LB.

Keller Constr. Co., Box 439, New Orleans, La. LB **$519,000** (4 bidders) ADMINISTRATION BLDG. and INFLAMMABLES BLDG., New Orleans, LOUISIANA. Mississippi River Bridge Auth., 422 City Hall, New Orleans, La. Modjeski & Masters, 2400 Canal St., New Orleans, La., engrs. CD 8/11/53, under Bridges.

Pennington & McAbee, LaFollette, Tenn. CA **$539,500**. five elementary SCHOOLS at Phillips, Cox, Douglas, Phelps and Liberty, LIBERTY, KY. Casey Co. Bd. Educ., Liberty, Ky. Perkins & Bryant, 508 Woodland St., Lexington, Ky., archts.-engrs. Awarded Apr. 1.

▲ **S & W Constr. Co.**, 2630 Midland Ave., Memphis, Tenn., CA **$2,027,126**. 10 story DOCTORS OFFICE BLDG. with 2 story attached GARAGE and SERVICE STATION, MEMPHIS, TENN. Baptist Memorial Hospital, 899 Madison Ave., Memphis, Tenn. Awarded Apr. 16. CD 12/6.

(Continued on page 86)

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(Continued from page 84)

MIDDLE WEST

HEAVY CONSTRUCTION—BA

▲ O., **Toledo**—BA 5/28—City, H. G. Rebensal, comr. Purchases, Safety Bldg., Contract B, sewage treatment plant improv., Sec. 1, general construction, incl. main equip. bldg., office wing, gas compressor bldg., gas meter house, boat house, primary effluent channel, pipe tunnels and revisions to Bay View Park Pumping Station, chlorine and laboratory bldg., raw sludge pumping stations, digested sludge pumping station and digester control chambers. Sec. II, electrical, Sect. III, plumbing; Sect. IV, heating, Sect. V, ventilation and air-conditioning, $3,500,000. Plans deposit $85. Extended date. Consoer, Townsend & Assoc., 360 E. Grand Ave., Chicago, Ill., consult. engrs. CD 4/3.

BUILDINGS—BA

† Ill., **Waukegan**—TRAINING CENTER—BA 5/10—U. S. Eng., 475 Merchandise Mart, Chicago, Zone 54, Ill. army reserve training center, Serial No. ENG-11-032-57-4. CD 8/24/56, under LB.

Wis., **Columbus**—HOSPITAL—BA 5/20—St. Mary's Hospital, Columbus, 4 story hospital addn. $500,000. Plans deposit $50. John J. Flad & Assoc., 2525 University Ave., Madison, archts. CD 12/21.

▲ Wis., **Milwaukee**—HOSPITAL—BA 5/21—St. Mary's Hospital, 2320 N. Lake Dr., 7 story, bsmnt., 50x265 ft., rein.-con., brick, stone hospital addn. $3,000,000. Plans deposit $100. Maguolo & Quick, 3226 S. 41 St., archts. CD 2/29/56.

BUILDINGS—SLC

Mich., **Alpena**—CHURCH, etc.—First Presbyterian Church, soon lets contract church, school, chapel, auditorium and stage, $500,000. Hurless E. Bankes, 16606 James Couzens, Detroit, archt. CD 4/5.

HEAVY CONSTRUCTION—LB & CA

† U. S. Eng., 925 New Federal Bldg., Pittsburgh 19, Pa., cancelled bids to have been opened Apr. 23, automatic portion of operations bldg. addn. and appurtenant facilities, Brookfield Air Force Station, Serial No. ENG-36-058-57-30, BROOKFIELD, O. CD 4/3.

† **P & H Constr. Co., Inc.**, 1157 East Sycamore St., Evansville, Ind., CA $305,254, automotive maintenance bldg., Bunker Hill Air Force Base, NBy 1360, PERU, IND. Ninth Naval Dist., Bldg. 1 A, Great Lakes, Ill. Bids Mar. 22. CD /6.

▲ **Great Lakes Dredging & Dock Co.**, 740 N. Plankington Ave., Milwaukee, Wis., LB $3,666,600 (2 bidders) bulkhead, dredging and backfill for South Pier No. 2, MILWAUKEE, WIS. Bd. Harbour Comrs., City Hall, Milwaukee, Wis. Bids Apr. 16. CD 2/20.

▲ MICHIGAN—State Hy. Dpt., Stevens T. Mason Bldg., Lansing. Bids opened 4/3,

Mich.—**American Bridge, Div. U. S. Steel Co.**, 9255 General Motors Bldg., Detroit, Mich. LB $1,311,703, est. $1,060,000. (9 bidders) bascule bridge on relocation of US-23 over Saginaw River 1 mi. north of Saginaw, BI BI of 73-27-13 C1-UN (I 97-2-16), FAI, Saginaw Co.

Mich.—**Raff & Dexter**, 210 W. Greenlawn Ave., Lansing, Mich. LB $100,354, est. $90,000. (11 bidders) remove bridge, build new bridge on Coleman Rd. over Big Salt River 5 mi. south of Coleman, CS BI of 56-2-21-C1, (S 876 3), Midland Co.;

Mich.—**H. R. Boyd & L. W. Fitch**, 22285 Michigan Ave., Dearborn, Mich. LB $95,653, est. $100,000. (17 bidders) continuous rein.-con. T-beam bridge North Territorial Rd. over US-23 relocation, M B2 of 81-10-15 C1-RN, Washtenaw Co.;

Mich.—**Sugden & Sivier, Inc.**, 13100 Cloverdale St., Oak Park, Mich. LB $173,989, est. $200,000. (12 bidders) rein.-con., steel T-beam bridge on relocation of US-23 over Ann Arbor R.R. at Whitmore Lake, MX 1 of 81-10-15 C2-RN, Washtenaw Co.; LB $196,290, est. $220,000. (14 bidders) rein.-con continuous T-beam bridge on US-23 relocation over Barker Rd. 0.3 mi. west of Whitmore Lake, M BI of 81-10-15 C1-RN; Washtenaw Co.;

Mich.—**Hertel-Deyo Co.**, 5205 Division St. S., Grand Rapids, Mich. LB $122,755, est. $150,000. (9 bidders) rein.-con., steel bridge on relocation of M-46 over Tamarac Creek 1.7 west of Howard City, F B2 of 59-17-2 C1-R (F 435 1), Montcalm Co.;

Mich.—**L. A. Davidson Co.**, 213 E. St. Joseph St., Lansing, Mich. LB $213,489, est. $260,000. rein.-con., steel grade separation bridge on Dearing Rd. over US-12 5.5 mi. west of Jackson, Interstate System, I B3 of 38-14-20 C1-RN (I 02-3 6) (38101), Jackson Co.; LB $297,707, est. $305,000. (12 bidders) rein.-con. steel twin structure on relocation of US-23 over Grand Trunk R.R. 1.5 mi. north of county line, BI XI of 25-6-4 C2-RO (F 219 13), Genesee Co.; LB $137,322, est. $160,000. (12 bidders) rein.-con. steel bridge on Sandstone Rd. over US-12 4.5 mi. west of Jackson, I B2 of 38-14-20 C1-RN (I 02-3 5) (38101), Jackson Co. CD 3/15 and 3/21.

▲ MICHIGAN—State Hy. Dpt., Escanaba. Bids opened 3/10.

Mich.—**Thornton Constr. Co.**, 1028 Ethel Ave., Hancock, Mich. LB $245,629, est. $370,000. (12 bidders) 20 ft. b. conc. Class I and aggregate shoulders 19.211 mi. on US-2 from M-134 northerly intermittently to M-28, M 17031 C1-RN, M 17032 C1-RN, M 49024 C4-RN, Chippewa and Mackinac Counties;

Mich.—**T. L. Whitehead Co.**, 1107 W. Easterday Ave., Sault Ste. Marie, Mich. LB $288,834, est. $320,000. (15 bidders) aggregate base course with prime and double seal 5.664 mi. on M-135 north east of M-28, M 48021 C1-R, M 48011 C1-R, Luce Co.;

Mich.—**Alpine Constr. Co. & Pierson Contg. Co.**, 200 Eddy Bldg., Saginaw, Mich. LB $1,156,751, est. $1,230,000. (16 bidders) dual 24 ft. c. conc. 3.57 mi. on Interstate Hy. US-2 from Castle Rock north to M-123 I 49025C5 RN (I 07-6 3), Fed. Aid Hy. Act. 1965, Interstate Hy. System, Mackinac Co.;

Mich.—**Bacco Constr. Co. & A. Lindberg & Sons**, Iron Mountain, Mich. LB $567,466, est. $630,000. (17 bidders) 22 ft. b. conc. 1.89 mi. US-2 some dual 24 ft. c. conc. and ramps north approach to Mackinac Bridge, F 49023 C1-UN (F 265 23), etc., Mackinac Co. CD 3/21 and 4/2.

▲ MICHIGAN—State Hy. Dpt., Stevens T. Mason Bldg., Lansing, Bids opened 4/3,

Mich.—**Carl Goodwin & Sons**, Allegan, Mich. LB $2,647,121, est. $2,800,000. (18 bidders) dual 24 ft. c. conc. 8.694 mi. on relocation US-16 from M-100 to Portland, I 34044 C1-RN (I 04 2 1), etc., Clinton and Ionia Counties;

Mich.—**Smith Bros. Excavating Co.**, Cassopolis, Mich. LB $103,187, (A) $103,458 (B), est. $130,000. (19 bidders) 24 ft. aggregate surf. course 4.997 mi. 4.01 on FAS Rte. No. 668 from east city line, CS 70-52 C2 (S 122 4), Ottawa Co.;

Mich.—**Julius Porath & Son Co.**, 432 Lafayette Bldg., Detroit, Mich. LB $368,018, est. $435,000. (21 bidders) 22 ft. c. conc. 2.671 mi. on M-59 from US-16 east, F 47082 C1-R (F 230 20), etc., Livingston Co. CD 3/15 and 3/21.

BUILDINGS—LB & CA

▲ **Cleveland Constr. Co.**, 3866 Carnegie Ave., Cleveland 15, O., CA $910,220. (6 bidders) general contract Newton D. Baker MEMORIAL BLDG. to house Cleveland College, CLEVELAND, O. Western Reserve University, 10940 Euclid Ave., Cleveland 6, O. Garfield, Harris & Robinson, 1740 12th St., Cleveland, O., archts. Awarded 4/15. CD 8/11/55.
Ed Sweeney Plumbing & Heating Co., 10210 Woodland St., Cleveland, O. CA $374,882, heating and ventilating (Cleveland, O.).

▲ **Matherson Bldg. Co.**, 4915 Russell St., Cleveland 29, O., Own Forces, $4,000,000. 106 HOMES, W. 224, 225 and Spencer Lane, FAIRVIEW PARK, O. CD 4/9/56.

▲ **Weinstein Constr. Co.**, 573 E. Tallmadge St., Akron, O., CA $3,677,000. 300,000 sq. ft. WAREHOUSE, Aurora Rd., SOLON, O. The Kroger Co., 35 E. 7 St., Cincinnati, O. Bids Mar. 5. CD 3/18, under LB.

Irmscher & Son, 1030 Osage St., Fort Wayne, Ind., CA $816,900 general contract HIGH SCHOOL near U. S. 24 and Woodburn Rd., WOODBURN, IND. Bd. Educ., Jefferson-Maumee-Milan Joint School Bldg. Corp., Woodburn, Ind. Bradley & Bradley, 1115 S. Clinton St., Fort Wayne, Ind., archts. Awarded Apr. 10.

▲ **Hess & Son, Inc.**, 1638 N. Luna Ave., Chicago, Ill. CA $5,000,000. SHOPPING CENTER, sewers, water lines and paving, Kensington Rd. and Dryden Pl., ARLINGTON HEIGHTS, ILL. Farr Chennock & Sampson, 111 W. Washington St., Chicago, Ill. Bids Jan. 17. CD 1/7.

City Wide Builders, 5400 Elston Ave., Chicago, Ill., CA $850,000. 1 story, 90,000 sq. ft., brick WAREHOUSE and 1 story MAINTENANCE BLDG., CICERO, ILL. Cities Service Oil Co., Cities Service Oil Bldg., Bartlesville, Okla. Bids Mar. 25. CD 3/20.

Consolidated Constr. Co., 800 Marquette St., Bay City, Mich. CA $465,197. CHURCH, BAY CITY, MICH. Immanuel Lutheran Church Parish, c/o Brysselbout, Starke & Assocs., archts., 202 Commercial Exchange Bldg., Bay City, Mich.

Henry W. DeKoning Constr. Co., 320 Municipal Court Bldg., Ann Arbor, Mich. CA $721,600. general constr. JUNIOR-SENIOR HIGH SCHOOL, DEXTER, MICH. Bd. Educ., Dexter Community Schools, Dexter, Mich. Carl C. Kressbach, 408 Wildwood St., Jackson, Mich., archt.

WEST OF MISSISSIPPI

HEAVY CONSTRUCTION—BA

† N. M., **Roswell**—DORMITORIES—BA 5/14—U. S. Eng., Box 1538, Albuquerque, 2 airmen's dormitories, Walker Air Force Base, ENG-29-005-57-90. $700,000. CD 4/10.

▲ **Tex., Freeport**—DEEP SEA TERMINAL—BA 5/20—Brazos River Harbor Navigation Dist., c/o George G. Badge, Dist. Cfrm., Freeport, constr. Deep Sea Terminal No. 2, at Brazos Harbor, incl. 600 ft. wharf $1,400,000. CD 5/20/52, under Earthwork, etc.

BUILDINGS—BA

Colo., **Colorado Springs**—HOSPITAL—BA 5/8—Memorial Hospital, 2400 E. Boulder St., 3 story hospital addn. $600,000. Edward L. Bunts & F. Lamar Kelsey, 21 E. Monument St., engrs. CD 4/24.

▲ **Minn., Eveleth**—HOSPITAL—BA 5/21—City, E. A. Taipale, clk., 50 bed hospital. $1,000,000. Plans deposit $30. S. C. Smiley & Assocs., 1250 Hennepin Ave., Minneapolis, archts. CD 3/25.

HEAVY CONSTRUCTION—LB & CA

MINNESOTA—State Hy. Dpt., 1246 University Ave., St. Paul;

Kimmes Constr. Co., Hastings, Minn. CA $766,130. grading, bit. surf. bridges 1.6 mi. between 1 mi. west of Hawley and Hawley, Clay Co. CD 3/27, under LB.

† **J. D. Armstrong Co.**, Ames, Iowa, CA $948,092. levees and channel alterations, Unit 1, Sec. II A, Little Sioux River near Onawa, Inv. 25-066-57-54, IOWA. U. S. Eng., 1709 Jackson St., Omaha, Neb. Bids Feb. 19. CD 2/26, under LB.

† **Cunningham-Kiewit Co.**, 4229 Lafayette St., Omaha, Neb. CA $791,166. repairing dikes and revetment

(Continued on page 88)

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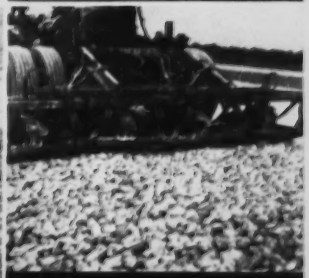


4 COMPACTING UNITS just fit this widening job. Change required only a few minutes.

(Continued from page 86)

Missouri River, Peterson Cut Off-Tysons Bend, near Modale, Inv. 25-066-57-84, IOWA, U. S. Eng. 1709 Jackson St., Omaha, Neb. Bids Apr. 4. CD 3/10, under LB.

† **Jensen & Krage**, 2220 Hawkeye Rd., Sioux City, Iowa. CA $834,444, runway exten., Sioux City Air Force Base, Inv. 25-066-57-76, SIOUX CITY, IOWA. U. S. Eng., 1709 Jackson St., Omaha, Neb. Bids Apr. 5. CD 4/11, under LB.

† **U. S. Eng.**, 1709 Jackson St., Omaha, Neb., rejected bids Mar. 21, relocation water supply intake, Inv. 25-066-57-75, MOBRIDGE, S. D. LB $600,040. CD 3/27, under LB.

† **Burton-Miller Constr. Co., Inc.**, P. O. Box 867, Ardmore, Okla., CA $555,000, addnl. storage facilities for ordnance storage area, Clinton-Sherman Air Force Base, NBy 6360, CLINTON, OKLA. Officer in Charge of Constr., Eighth Naval Dist., Bldg. 16, U. S. Naval Station, New Orleans (Algiers), La. Bids Apr. 11. CD 3/14.

H. J. Happel Co., East Admiral Blvd., Tulsa, Okla., LB $507,000, est. $518,000. Northside Sewage Treatment Plant, TULSA, OKLA. City, City Hall, Tulsa, Okla. Bids Apr. 16. CD 3/27.

▲† **U. S. Govt.** c/o Purchasing & Contracting Office, Foster Air Force Base, Victoria, Tex., cancelled bids to have opened Apr. 11, constr. and finance 500 family housing units, Foster Air Force Base, (VIII Housing Act), Inv. 41-656-57-60, VICTORIA, TEX. $5,750,000. Will re-advertise. CD 3/20.

Murphy Bros. Constr. Co., E. 3728 Broadway, Spokane, Wash. CA $490,000, relocate 4½ mi. Hy. 10-A between McKay Creek and Swamp Creek near Noxon, replacing road to be inundated by Noxon Rapids hydroelectric proj., Sanders Co., MONTANA. Washington Water Power Co., W825 Trent St., Spokane, Wash.

COLORADO—State Hy. Dpt., 4201 E. Arkansas St., Denver, Colo. **M. C. Jacobs Constr. Co.**, 1161 S. St. Paul St., Denver, Colo., CA $209,238, est. $184,000, base course surf., 0.758 mi., Proj. No. S 0033 (2), Crowley and Otero Counties. Bids Apr. 12. CD 4/3.

Colo. **E. J. Rippy & Sons Co.**, New Castle, Colo., CA $132,548, est. $128,000, grading, structures, grav. surf., 3.007 mi. State Hy. No. 317, Proj. S 0146 (1), Hamilton and Pagoda, Moffat Co. CD 4/5.

BUILDINGS—LB & CA

M. Mandel, 1014 Plymouth Ave., Minneapolis, Minn. LB $504,474. (12 bidders) general constr. women's DORMITORY, ST. PAUL, MINN. Hamline University, 1536 Hewitt Ave., St. Paul, Minn. Bids Apr. 16. CD 4/2

Carl A. Nelson Constr. Co., 1815 Des Moines St., Burlington, Iowa, CA $449,000. Aquinas Catholic HIGH SCHOOL, FORT MADISON, IOWA. Catholic Parishes of St. Mary's, St. Joseph's and Sacred Heart Office in Sacred Heart Hall, Fort Madison, Iowa. Bids Mar. 19, awarded Apr. 9. CD 3/20

▲ **Cunningham Bros. Inc.**, 359 E. Grand Ave., Beloit, Wis., CA $1,024,000. two PARKING GARAGES, WATERLOO, IOWA. City, City Hall, Waterloo, Iowa. Bids Mar. 13, awarded Apr. 24. CD 3/29, under LB.

Buckley Constr. Co., 4979 Mardel Ave., St. Louis 9, Mo. CA $576,449. Murphy and Maple Grove Elementary SCHOOLS, addns. to Cedar Hill, High Ridge and House Spring SCHOOLS, HOUSE SPRINGS, MO. School Dist. R-1 of Jefferson Co., Richard B. Gruetzemacher, supt. Schools, House Springs, Mo. Bids Mar. 14. CD 2/25.

▲ **David P. Leahy, Realtors**, 2200 Telegraph Rd., Lemay 21, Mo. Owner Builds. $3,000,000. 100 brick RESIDENCES, in Telegraph Park subdivision adjacent to Kingdon Dr. and Telegraph Rd., incl. concrete, storm and sanitary sewers, LEMAY (ST. LOUIS 23 P.O.), MO.

▲† **Wilson Constr. Co.**, 535 J. St., Lincoln, Neb. CA $1,825,210. TM-177 incl. 8 MASONRY BLDGS. ENG-25-066-57-22, DICKINSON, N. D. U. S. Eng., 1709 Jackson St., Omaha, Neb. CD 2/25, under LB.

Meisner-Anderson Co., Bismarck, N. D. CA $515,256, general constr. HIGH SCHOOL, MINOT, N. D. Bd. Trustees, Minot Catholic High School, Minot, N. D. CD 4/15, under LB.

Meisner-Anderson Co., Bismarck, N. D., LB $502,256 (6 bidders) general contract HIGH SCHOOL, MINOT, N. D. Bd. Trustees, Minot Central Catholic High School, Minot, N. D. Bids Mar. 28. I. L. Rush, Minot, N. D., archt.

▲ **Foy Constr. Co.**, Hutchinson, Kan. CA $1,180,389, general constr. campus type 1 and 2 story, brick, concrete, steel Senior High SCHOOL; five units, Marion, Klemp, Thornton and Halderman Sts., LEAVENWORTH, KAN. Pub. Schools of Leavenworth, Hugh C. Bryan, supt. Schools, 624 Olive St., Leavenworth, Kan. Bids Apr. 11. CD 3/28.

▲ **Celanese Corp. of America**, 180 Madison Ave., New York, N. Y. Owner Builds. $5,500,000. POLYOLEFIN PLANT; $4,000,000, expansion of existing PLANT; $200,000, new STORAGE or WAREHOUSING; $150,000, new loading facilities. BISHOP, TEX. Grand total $9,850,000. CD 2/8.

▲ **Chemical Constr. Co.**, 525 W. 43rd St., New York, N. Y. CA Est. $10,000,000. Proj. N. ACETYLENE PLANT. (3 separate bldgs.) DEER PARK, TEX. Rohm & Haas, Deer Park, Tex. Grand total est. $14,550,000. CD 2/8/56.

Foster Wheeler Corp., 6200 Bowling Green, Houston, Tex., CA Est. $20,000,000. Proj. L. AMMONIA and METHANOL PLANT (DEER PARK, TEX.)

Farnsworth & Chambers Co., Box 74. **Tellepsen Constr. Co.**, 1710 Telephone Rd., **Graver Constr. Co.**, 5343 McCormick St., **Fisher Constr. Co.**, 4711 Greeley St., all Houston, Tex., CA Est. $2,500,000, foundation work on 4 prime plant jobs, Proj. N, L, F2 and B2, DEER PARK, TEX);

George Consolidated, 7225 Culmore St., Houston, Tex., CA Est. $1,000,000, water, sewer, gas, underground lines and underground pipe work for all plant bldg. and area. (DEER PARK, TEX.);

Stearns-Roger Mfg. Co., 1st City National Bank Bldg., Houston, Tex., CA Est. $750,000; mechanical work on portions of plant projects L & N (Deer Park, Tex.);

Owner Builds. $300,000; some general work connects with plant constr., (DEER PARK, TEX.).

Mead & Mount Constr. Co., 1560 Denver Club Bldg. Denver, Colo. CA Est. $600,000. 1 story, 60,000 sq. ft., brick, block OFFICE and WAREHOUSE, DENVER, COLO. General Supply Co., c/o T. H. Buell Co., engr.-archt., 730 14 St., Denver, Colo. Bids Mar. 26. CD 3/8.

FAR WEST

HEAVY CONSTRUCTION—BA

▲ **California**—BA 5/15—State Dpt. Water Resources, 2024 J St., Sacramento, constr. Western Pacific Railroad relocation, Tunnels, Nos. 4 and 5, Butte Co., Feather River Proj., Oroville Dam, $10,000,000. Extended date. CD 4/11.

† **Calif., Sacramento**—BA 5/17—U. S. Eng., 1209 8th St., water distr. facilities, at Mather Air Force Base, incl. 300,000 gal. elevated steel water tank, ENG-04-167-57-51, Spec. 2312. $400,000. CD 11/16.

BUILDINGS—BA

▲† **Ariz., Fort Huachuca**—BARRACKS—BA 5/15—U. S. Eng., 751 S. Figueroa St., Los Angeles, Calif., constr. enlisted men's barracks, ENG-04-353-57-92. $2,000,000. CD 7/20/55.

▲ **Calif., Stockton**—WOMEN'S DORMITORY—BA 5/15—College of the Pacific, N. Pacific Ave., wood frame, brick veneer women's dormitory at College of the Pacific. $1,200,000. Plans deposit $50. Clowdsley & Whipple, 206 Exchange Bldg., Stockton, archts. CD 7/11.

BUILDINGS—SLC

Calif., Norwalk—HOSPITAL—Studebaker Hospital, Norwalk, soon lets contract 25,775 sq. ft. reinforced brick, frame, stucco, TypeIII 50-bed hospital, $600,000. Neilsen & Moffatt, 4072 Crenshaw Blvd., Los Angeles, archts.

HEAVY CONSTRUCTION—LB & CA

▲† **Matich Bros., M.M. Sundt & Vann Constr. Co.**, P. O. Box 390, Colton, Calif., LB $2,544,219, (6 bidders) firing-in butt and runway reconstr. Williams Air Force Base, Serial No. ENG-04-353-57-81, CHANDLER, ARIZ. U. S. Eng., 751 S. Figueroa St., Los Angeles, Calif. Bids Apr. 17. CD 3/14.

▲ **Arizona Concrete Pipe Co.**, 1746 W. Fillmore St., Phoenix, and **Martin Constr. Co.**, Box 934, Tucson, Ariz., CA $1,154,182, est. $1,239,181, 15 mi. 12- to 33-in. sewer lines, combined Phoenix-Glendale project, PHOENIX, ARIZ. City, 1st. Ave. and Washington St., Phoenix, Ariz. Awarded Apr. 12. CD 1/23/56.

▲ **Sierra Constr. Corp.**, 2137 S. Industrial Rd., Las Vegas, Nev. CA $402,358. airmen's dining hall Nellis Air Force Base, ENG-04-203-57-116, LAS VEGAS, NEV. U. S. Eng., 180 New Montgomery St., San Francisco, Calif. CD 3/1, under LB.

▲† **Frank Capriotti**, 1725 E. Second St., Reno, Nev., CA $1,913,788, dining hall and heating plant, in 4 airmens' dormitories and 2 officers' quarters, Stead Air Force Base, ENG-57-37, RENO, NEV. U. S. Eng., 1209 Eighth St., Sacramento, Calif. Bids Feb. 21, awarded Apr. 12. CD 3/27, under LB.

† **George Chicha Co.**, E. 2917 Sharpe St., Spokane, Wash., LB $404,200, est. $408,000 (2 bidders) repairing north jetty at mouth of Suislaw River near Florence, CIVENG-35-026-57-212, OREGON. U. S. Eng., Pittock Block, Portland, Ore. Bids Apr. 15. CD 4/17, under LB.

† **C. M. Corkum Co.**, 2630 S.W. 2 Ave., Portland, Ore., LB $541,418 (7 bidders) Cascade Salmon Hatchery on Eagle Creek, OREGON. Fish & Wildlife Service, 1001 N.E. Lloyd Blvd., Portland, Ore. Bids Apr. 15. CD 4/5.

CALIFORNIA—State Div. Hys., 1120 N. St., Sacramento.

M.J.B. Constr. Co., Inc. & Lord & Bishop Inc., Box 1261, Stockton, Calif., CA $528,753, grading, surfacing 1.5 mi. U. S. 101 through Chular and constr. rein-con. bridge, Monterey Co. Bids Feb. 13, awarded Mar. 20. CD 3/20, under LB.

▲ **CALIFORNIA**—State Div. Hys., 1120 N. St., Sacramento. Bids opened 4/17.

Harms Bros., C. M. Syar and Erickson Phillips & Weisberg, 5261 Stockton Blvd., Sacramento, Calif., joint venture, LB $4,118,053 (6 bidders) grading, surfacing 3.5 mi. six lane divided freeway on U. S. 40 between 0.2 mi. North Vallejo Way and 0.4 mi. North Redwood St. in Vallejo to provide and expand approach to Carquinez Bridge, and constr. 7 concrete bridges, the present 4-lane fy. will be widened to provide two 36 ft. traveled ways. CD 3/21.

▲† **A. Irish Co.**, 2944 Gleneden St., Los Angeles, Calif. LB $1,674,009. (2 bidders) imprv. Eaton Wash Channel Eaton Dam to Huntington Dr., ENG-04-353-57-29, CALIFORNIA, U. S. Eng., 751 S. Figueroa St., Los Angeles, Calif. Bids Apr. 16. CD 3/18.

Tony Crisalli Corp., 10503 6th Ave., Inglewood, Calif. CA $843,928 (Alt. B) Joint Outfall Sewer "B" Unit 98, Section 2, and Unit 9C, Compton, LOS ANGELES, CALIF. Los Angeles Co. Sanitation Dist. 2, 2020 Beverly Blvd., Los Angeles, Calif. Bids Mar. 27. CD 4/8, under LB.

▲† **Gordon H. Ball**, 300 Camille Ave., Danville, Calif., CA $7,821,923 (5 bidders). Schedule A, concrete runway extension and widening for landing jet bombers at Mather Air Force Base, ENG-04-167-57-40, SACRAMENTO, CALIF. U. S. Eng., 1209 8th St., Sacramento, Calif. Bids Apr. 12, awarded Apr. 18. CD 4/16, under LB.

▲ **Williams & Burrows Constr. Co.**, 500 Harbor Blvd., Belmont, Calif., LB $1,448,770 (4 bidders) sewage treatment plant enlargement, WALNUT CREEK, CALIF. Central Contra Costa Sanitary Dist., 1250 Spring Brook Rd., Walnut Creek, Calif. Bids Apr. 18. CD 3/18.

BUILDINGS—LB & CA

† **Elle & Vitt Constr. Co.**, P. O. Box 1190, Pocatello, Idaho, LB $848,848 (1 bidder) housing, Increment No. 2, Army Electronic Proving Ground, Serial No. ENG-04-353-57-77, FORT HUACHUCA, ARIZ. U. S. Eng., 751 S. Figueroa St., Los Angeles, Calif. Bids Apr. 12. CD 4/1.

Mardian Constr. Co., P. O. Box 1032, Phoenix, Ariz., CA $900,000, 165,000 sq. ft. electronics WAREHOUSE AND OFFICE BLDG., PHOENIX, ARIZ. Western Electric Co., 38th Ave. and Indian School Rd., Phoenix, Ariz. Awarded 4/13.

▲ **M. M. Sundt Constr. Co. & Shippman-Codd Constr. Co.**, Box 2542, Tucson, Ariz., CA $3,000,000, HIGH SCHOOL, TUCSON, ARIZ. Tucson School Bd., N. Swan Rd. and E. 5th St., Tucson, Ariz. Bids Mar. 5. CD 1/30.

L. C. Dunn, 3101 Wilshire Blvd., Los Angeles, Calif., CA $480,000. 126x200 ft., 12 rooms, brick STORE BLDG., 501 Loara St., ANAHEIM, CALIF. Broadway Hale Co., 401 S. Broadway, Los Angeles, Calif.

Hahn Development Co., 219 S. Hawthorne St., Hawthorne, Calif. Owner Builds. $854,500. 29x50 ft. 65 single family DWELLINGS, Placenta Ave. and South St., Lots 11-75, TR 2688, ANAHEIM, CALIF.

Frank M. Crane, 4 Baker Blvd., Ukiah, Calif., LB $857,922 (8 bidders) 41,000 sq. ft., frame, stucco, rein.-con. HIGH SCHOOL, incl. GYM and LOCKER ROOM, BOONVILLE, CALIF. Anderson Valley Unified School Dist., c/o Supt., Boonville, Calif. Bids Apr. 11. CD 3/13.

Oceanside-Carlsbad Union High School Dist., 801 Pine Ave., Carlsbad, Calif., rejected bids opened Mar. 26, CARLSBAD HIGH SCHOOL, CARLSBAD, CALIF. LB $732,600. CD 4/8.

▲ **Fred Macomber**, 8818 Melrose Ave., Los Angeles, Calif. LB $1,331,727, (4 bidders) 2 story, 81,000 sq. ft., brick, rein.-con. LIBRARY, FRESNO, CALIF. Fresno Co. Court House, Fresno, Calif. Bids Apr. 16. CD 2/27.

Sherman Johnson, 10329 E. Weaver St., El Monte, Calif., CA $462,000, frame, stucco NORTH ELEMENTARY SCHOOL, GARDEN GROVE, CALIF. Alamitos School Dist., 12012 S. Magnolia Ave., Garden Grove, Calif. Daniel Mann Johnson & Mendenhall, 3325 Wilshire Blvd., Los Angeles, Calif., archts. and engrs. Bids Mar. 15, awarded 4/12. CD 12/14.

J. A. McNeil Co., Inc., 3115 W. Mission Rd., Alhambra, Calif., CA $401,200. 3 story, 57x111 ft. concrete OFFICE BLDG., 10920 Wilshire Blvd., LOS ANGELES, CALIF. Security Federal Savings & Loan Assoc., 1049 Galey Ave., Los Angeles, Calif.

▲ **C. L. Peck Constr. & Realty Co.**, 816 W. 5th St., Los Angeles, Calif., CA Est. $10,000,000. 6 story HEADQUARTERS Bldg., 10-story tower, 3 level basement, concrete bolted steel frame monolithic fdn., marble granite and stainless steel, Wilshire Blvd., LOS ANGELES, CALIF. Tidewater Associated Oil Co., PE Bldg., Los Angeles, Calif. Claude Beelman & Assocs., 4721 Beverly Blvd., Los Angeles, Calif., archts.

▲ **Steed Bros.**, 714 Date St., Alhambra, Calif., CA $2,773,000. SCIENCE BLDG. at Los Angeles College of Applied Arts and Sciences, San Bernardino Campus, LOS ANGELES, CALIF. State Div. Architecture, 1100 S. Grand Ave., Los Angeles, Calif. Bids Apr. 3, awarded Apr. 18. CD 4/9, under LB.

▲ **Rothschild, Raffin & Wierick Constr. Co.**, 274 Brannan St., San Francisco, Calif., CA $4,066,400, rein.-con. structural steel MILLS HIGH SCHOOL, MILLBRAE, CALIF. San Mateo Union High School Dist., c/o Secy., San Mateo, Calif. Bids Apr. 9. CD 4/12, under LB.

S & S Constr. Co., 1750 S. La Cienega Blvd., Los Angeles 35, Calif. Owner Builds. $627,000, 1,227 sq. ft. 57 DWELLINGS, Bechard Ave., Dilworth St., Larwin Rd., Wilder Ave., NORWALK, CALIF.

Fred J. Chapek, 605 Fremont Way, Sacramento, Calif. CA $929,000. ENTERPRISE HIGH SCHOOL AND CENTRAL VALLEY HIGH SCHOOL addns. REDDING, CALIF. Shasta Union High & Junior College Dist., c/o Supt., Redding, Calif. Bids Apr. 16, awarded Apr. 18. CD 4/1.

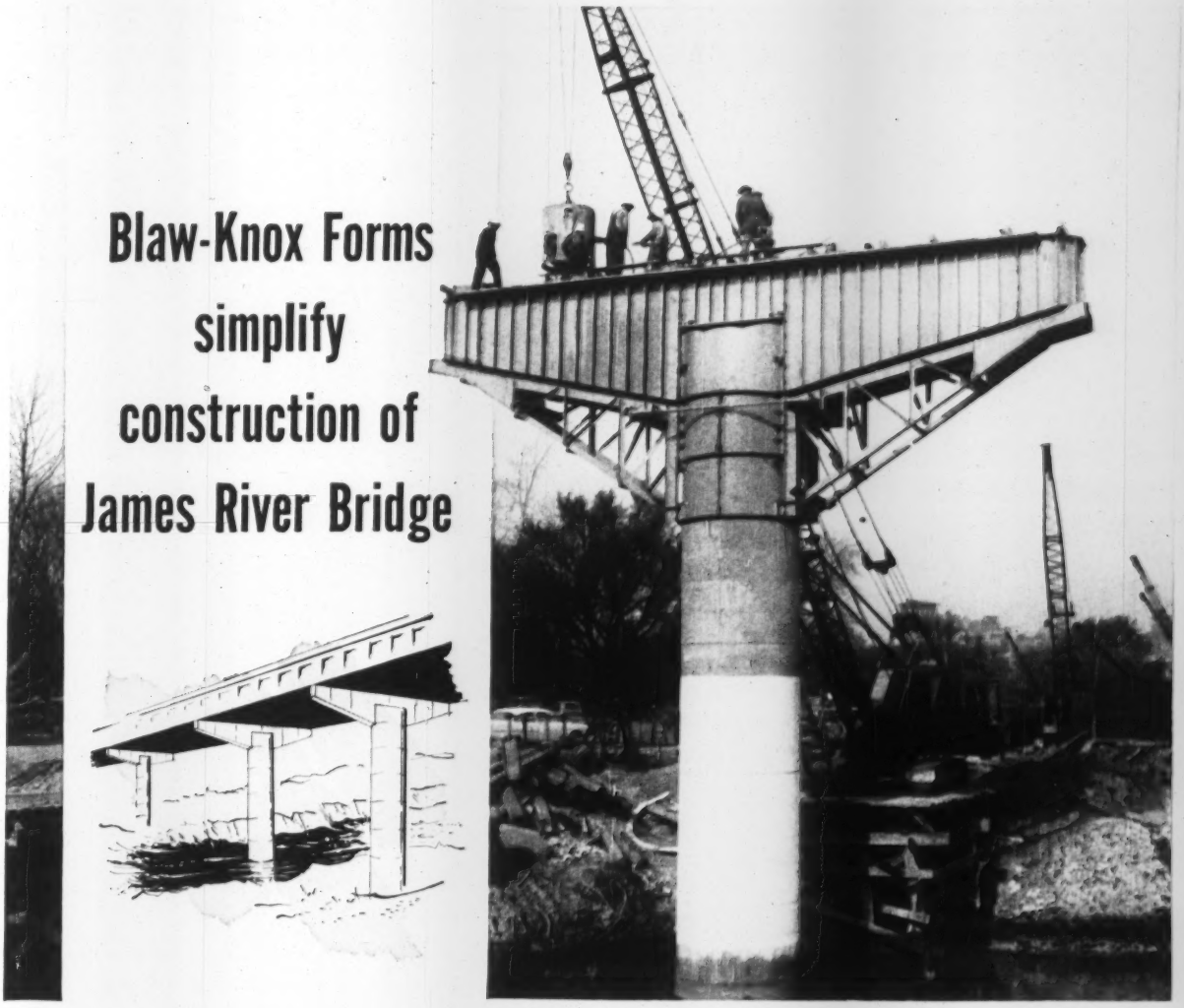
Integrated Constr. Engineers, Inc., P. O. Box 683, Downey, Calif. LB $444,669, (7 bidders) North HIGH SCHOOL addns. Contr. No. 1, TORRANCE, CALIF. Torrance Unified School Dist., Torrance, Calif. George F. Schreiber 5445 E. Washington Blvd., Los Angeles, Calif., archt. Bids Apr. 12. CD 6/14/55.

▲† **Sun Gold Inc. & Inland Empire Builders, Inc.**, 3631 10th St., Riverside, Calif. LB $2,824,000. (joint venture) Base Bid 500-unit HOUSING, TRAVIS AIR FORCE BASE, CALIF. Base Procurement Office, 5th Air Base Group, Travis Air Force Base, Calif. CD 4/8

Horny Constr. Co., 125 N. La Brea St., Los Angeles, 36, Calif. Owner Builds. $424,160. 1,345 sq. ft.

(Continued on page 90)

Blaw-Knox Forms simplify construction of James River Bridge



New forming method eliminates guying and shoring • speeds setting and stripping

● A basically new idea in steel column forming for the "T"-shaped substructure of the James River Bridge at Richmond, Va. on the Richmond-Petersburg Turnpike has simplified work for contractors. These specially engineered forms by Blaw-Knox allows the 44-ft. "T"-heads of the substructure to be poured as an integral part of the column without shoring or guying.

Each of the 100 columns on this 6-lane, divided-roadway bridge was poured in 16-ft. and higher lifts. When the reinforced concrete had set all the forms were removed except a 2-ft. lap ring which supported the forms for the next lift. When the "T"-hammerhead is poured a unit of special pier forms supports the bottom and side forms.

After the concrete sets, the side forms are removed ahead of the bottom forms and used on the next column. Due to the varying column heights an adjustable, circular, telescoping form was set on the foundation for the initial pour.

If you are bidding on any of the many bridges or structures in the new highway program or have any difficult concrete forming jobs ahead of you be sure to make use of the Blaw-Knox Steel Forms Consultation Service.

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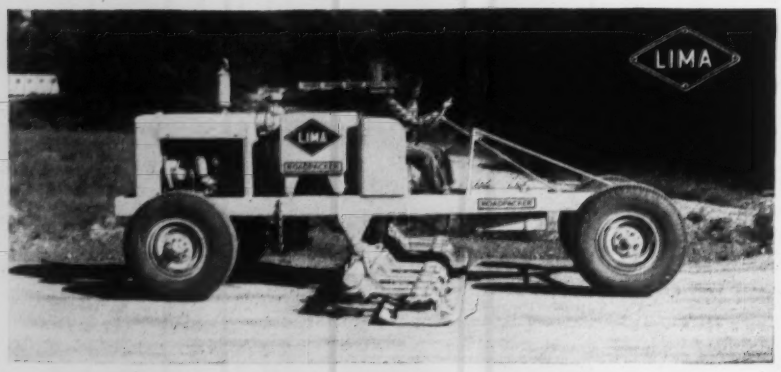

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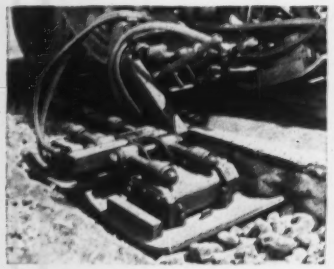
Macadam Bases—Coarse aggregate for bases up to 12 in. thick can be spread in a single layer, then uniformly compacted to final density by the Roadpacker over a 13 ft, 1 in. width. This single course construction, possible only with vibrators, reduces spreading time by half. Also it eliminates the need for backtracking all the equipment for the second pass; and contour shaping is done once—instead of twice. In waterbound work, the Roadpacker's tamping and vibrating action runs in screenings solid from top to bottom. Only three spreads of screenings are required, and much of the hand labor of spreading, brooming and rolling is eliminated.

Gravel Subbases and Soil Cement Bases—Specified density is obtained in one to three passes, depending on material and depth. Because the Roadpacker compacts equally well traveling forward or in reverse, there's no deadheading when two or more passes are needed. Vertical packing action prevents troublesome shoving on difficult materials and does not drift the spread down on super-elevations.



Widener Attachment—Vibrating shoes compact material in widening trench while Roadpacker runs on existing pavement. Easily adjusted for various width trenches.

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- **Fast and maneuverable**—*Highway speeds up to 28 mph, reverse speeds up to 7 mph. Steers easily. For work in tight places, can be operated with only four shoes. Shoes can be folded up easily and need not be removed from machine.*
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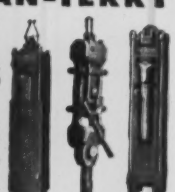

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(Continued from page 88)

6 rooms 32 stucco DWELLINGS, Lots 7-38 Tr. 22831, WEST COVINA, CALIF.

Alco Constr. Co., 7422 Trask St., Westminster, Calif., Owner Builds. $680,000. 1,100 sq. ft. 68 DWELLINGS, Tr. 3157, WESTMINSTER, CALIF.

CANADA

BUILDINGS—BA

Que., La Malbaie—SCHOOL, etc.—BA 5/9—La Commission de la Malbaie, P. Rene Boulianne, pres., La Malbaie, 3 story, bsmt., 55x250 ft., rein.-con., school and residence, Rue Principale. $500,000. Walter Warren, 3711 Dupuis Ave., Montreal, archt. CD 9/14.

BUILDINGS—SLC

▲ Ont., Waterloo—SHOPPING CENTER—Zehr's Markets Ltd., 696 Belmont St., Kitchener, soon lets contract 12- to 15-store shopping center; Zehr's Mall on 16-acre site on Fromer Schneider Farm, Unit No. 1, drive-in restaurant. $1,000,000. John Lingwood, 4 Queen St. N., Kitchener, archt.

HEAVY CONSTRUCTION—LB & CA

ALBERTA—Dpt. P. Wks., Hunter Bldg., Ottawa, Ont. W. C. Arnett & Co. Ltd., 775 Queensway, Etobicoke, Toronto, Ont., CA $524,580. grading, culverts, base course Mile 34.50 Mile 40, Banff-Jasper Hy., Banff National Park. Bids Mar. 5, awarded Apr. 12. CD 3/13, under LB.

BUILDINGS—LB & CA

▲ Burns & Dutton Concrete & Constr. Co. Ltd., 5440 1 St. S. W., Calgary, Alta., CA $1,525,000 (8 bidders) 2 story, rein.-con. frame, brick veneer SCHOOL, Provincial Institute of Technology & Art, CALGARY, ALTA. Alberta Dpt. P. Wks., Parliament Bldgs., Edmonton, Alta. Bids Mar. 28, awarded Apr. 15. CD 4/15, under LB.
Canadian Comtock Co. Ltd., 206 11 Ave. S. E., Calgary, Alta., CA $699,420 (1 bidder) heating, plumbing and ventilating, contract, for school (Calgary, Alta.).

Queensview Constr. & Development Ltd., 525 Bank St., Ottawa, Ont., LB $797,252 (7 bidders) new wing to RADIO PHYSICS LABORATORY, OTTAWA, ONT. Defence Constr. (1951) Ltd., 56 Lyon St., Ottawa, Ont. Bids Apr. 16. CD 3/21.

R. G. Kirby & Sons Ltd., 539 Yonge St., Toronto, Ont., CA Est. over $500,000. 1 story, 260x400 ft. PLANT, Dixie Rd., TORONTO, ONT. Dewey-Almy Chemical Co. of Canada Ltd., 1244 Dufferin St., Toronto, Ont. Bids Mar. 26, awarded Apr. 5. CD 3/20.

Samuel Stone, 51 Old Park Rd., Toronto, Ont., will not construct 10 story, rein.-con., masonry, steel frame, APARTMENT, 48 Isabella St., TORONTO, ONT. Project cancelled. Est. $600,000. CD 1/10, under CA.

▲ Boucherville Development Ltd., 643 Blvd. Marie Victorin, Boucherville, Que., Owner Builds, $1,000,000. HOUSING Program on new streets, BOUCHERVILLE, QUE. Chalifoux & Geoffroy, 6275 Papineau Ave., Montreal, Que., archts.

▲ J. H. Dupuis Ltd., 4324 Jeanne d' Arc St., Montreal, Que., CA $1,825,000. 4 story, bsmt. 100x400 ft., rein.-con. brick, Classical COLLEGE, rue Sauve, MONTREAL, QUE. Rev. Soeurs de Ste. Anne, 1950 rue Prevost, Lachine, Que. Bids Mar. 25, awarded Apr. 10. CD 3/13.

J. H. Brien, 77 Notre Dame St., St. Martin, Que., Owner Builds, Over $500,000. 82 HOUSING units, on new streets, ST. MARTIN, QUE.

LATIN AMERICA

BUILDINGS—BA

▲ Argentina—POWER STATION—BA 6/27—Ministry of Commerce & Industry, Buenos Aires, 600,000 kw. thermo electric power station, Buenos Aires. CD 1/28.

AMERICANS ABROAD

BUILDINGS—BA

† Korea, Seoul—HOUSING—BA 5/6—Dpt. State, Office of Foreign Bldgs., Wash., D. C., U. S. A., staff housing. Extended date. Ernest J. Kump, 450 Ramona St., Palo Alto, Calif., U. S. A., archt. CD 4/1.

▲† Pakistan, Karachi—OFFICE—BA 5/25—Dpt. State, Office of Foreign Bldgs., Wash., D. C., U. S. A., embassy office bldg. Richard J. Neutra & Robert Alexander, 2379 Glendale St., Los Angeles, Calif., U. S. A., archts. CD 2/7/56.

HEAVY CONSTRUCTION—LB & CA

▲ Gahagan Dredging Corp., 90 Broad St., New York, N. Y., U.S.A., CA $5,701,500. dredging inner harbor at Port Kembla (first section) AUSTRALIA. New South Wales Public Works Dpt., Sydney, Australia. Bids Feb. 7. CD 1/10.

PROPOSED PROJECTS

WATER SUPPLY

▲ Calif., Long Beach—City, City Hall, $6,884,000 bond election June 4, water supply improvs. incl.: 30 in. steel, concrete cylinder pipe distr. mains Atlantic and Orange Ave., and 24 in. Palo Verde Ave. $674,000.
sewer 3.5 m. g. steel storage tanks at Alamitos Reservoir, $1,719,000.

(Continued on page 92)

Armco SMOOTH-FLO Sewer Pipe being lowered into a trench for new South Bend, Indiana, combined sewer. Special trench shield was designed by the contractor. Exterior of pipe has a protective whitewash coating.

Clyde E. Williams & Associates
Consulting Engineers

Raymond Andrysiak
City Engineer

Niles Excavating Company
Contractors

Contractor Installs Armco SMOOTH-FLO Sewer Pipe 50% Faster Than Estimated

Back hoe pulling shield into position for another length of SMOOTH-FLO Pipe. In background is truck with nine lengths of pipe.

The Niles Excavating Company, contractors of South Bend, Indiana, recently installed Armco SMOOTH-FLO Pipe as a combined sewer for South Bend. This contractor found he could install the SMOOTH-FLO Pipe 50% faster than anticipated!

Considering equipment and manpower, the contractor estimated he could complete 225 feet of the sewer a day. But he had no trouble in laying and finishing as much as 340 feet a day.

A special trench shield designed by the contractor helped speed the job. A back hoe excavated ahead of the shield about two inches below grade. Then it pulled the shield along the trench. A flat metal plate on the shield leveled the earth in the trench bottom, providing a soft cushion and uniform grade.

Armco SMOOTH-FLO Pipe was placed through the shield by means of the lifting lugs. After attaching coupling bands, the pipe was backfilled immediately. And the shield moved on.

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Northern Illinois Toll Highway

Bids to be opened May 23, 1957

The work to be done under this Contract shall be commenced on June 1, 1957, or on such earlier date as may be mutually agreed upon between the Commission and the Contractor. All work under this Contract shall be completed on or before December 15, 1958, and consists of:

The grading, drainage, paving, seeding, the construction of appurtenances, and the erection of precast concrete and structural steel bridges, for approximately 2.385 miles of the Northern Illinois Toll Highway in Construction Section T-1A thereof, beginning at a point approximately 135 feet west of the centerline of the Grand Trunk and Western Railroad at Northern Illinois Toll Highway Centerline Station 98 + 40.00 in Thornton Township, Cook County, Illinois and extending in a westerly direction to a point approximately 125 feet east of Ashland Avenue, at the Northern Illinois Toll Highway Centerline Station 277 + 12.00 in Thornton Township, Cook County, Illinois.

The approximate quantities of the principal items of work are as follows:

Borrow	**560,000 C.Y.**
Roadway Excavation	**1,345,000 C.Y.**
Special Excavation	**63,000 C.Y.**
Selected Subgrade	**72,250 C.Y.**
Granular Subbase	**62,200 C.Y.**
10" Reinforced P.C.C. Pavement	**156,000 S.Y.**
3" Bituminous Shoulders	**83,000 S.Y.**
Structure Concrete	**11,700 C.Y.**
Reinforcing Steel	**1,540,000 Lbs.**
Structural Steel—Erection	**3,280,000 Lbs.**

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20 N. Wacker Drive, Chicago **By Austin L. Wyman, Chairman**

Write, wire or phone for detailed information and necessary forms, Chief Engineer, Room 1654, 20 N. Wacker Dr., Chicago 6, Ill. Telephone FRanklin 2-7020.

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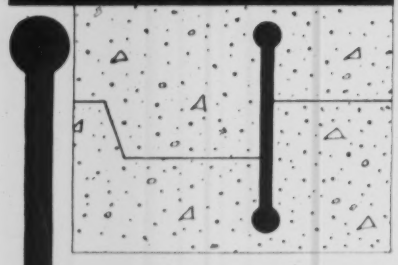
FOR MASONRY CONSTRUCTION JOINTS



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MADESCO BLOCKS
MADESCO TACKLE BLOCK CO.
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Engineered to Serve Your Special Service Needs

(Continued from page 90)

pumping station and header main, $433,000; treatment basin and header mains, 10 m. g. concrete retaining wall reservoir, $588,000;

16- to 24-in. steel, concrete cylinder pipe collection mains in Wardlow St., Studebaker Rd. and Connant St., $938,000. James M. Montgomery, 535 E. Walnut St., Pasadena, consult. engr.

▲ **Calif., Newport Beach**—City, City Hall, 1200 acre foot reservoir in Corona Del Mar. $1,712,000 (cost reduced). James M. Montgomery, 535 E. Walnut St., Pasadena, consult. engr. CD 3/20.

Ga., Decatur—Bd. Comrs. DeKalb Co., Court House, Decatur, bond election May 15, addnl. water mains, water sys. imprvs. $500,000. CD 3/24/55.

▲ **N. Y., Chili**—Chili Bd. Water Supervs. water distr. sys. to serve Chili area north of Black Creek, Northern Chili Twp. $2,660,000, A. Bradford Squire, 10 Gibbs St., Rochester, consult. engrs.

Tex., Fort Worth—Consolidated Vultee Aircraft Corp., c/o A. Eiswin, Grants Lane, 2 m.g. water reservoir at Convair Plant. $125,000. CD 1/5/53.

SEWERS, WASTE DISPOSAL

▲ **Calif., Florin**—Florin Community Services Dist., c/o Director, Florin, defeated $1,000,000 bonds Apr. 9, sewerage system expansion. CD 2/20.

▲ **Conn., Greenwich**—City, City Hall, Pemberwick sewer tunnel and contributing sewerage system. $1,500,000.

▲ **Ga., Decatur**—Bd. Cmrs. DeKalb Co., Court House, Decatur, bond election May 15, sewerage sys. expansion. $3,500,000. CD 8/10/55.

Kan., Garden City—City, Charles R. Peebles, clk., voted $650,000 bonds Apr. 2, sewerage sys. imprvs., incl. sewage treatment and disposal works and about 1 mi. 24 and 30 in. interceptor line. Sereis, Van Doren & Hazard, 2910 Topeka Blvd., Topeka, consult. engrs.

▲ **Kan., Wichita**—City, Frank H. Backstrom, city mgr., City Hall, defeated $6,985,000 bonds Apr. 2, sewage plant expansion south of Wichita on Arkansas River. Black & Veatch, 1500 Meadow Lake Parkway, Kansas City 14, Mo., consult. engrs. CD 3/13.

▲ **N. H., Derry**—Town, Bd. Selectmen, sewerage sys. incl. treatment plant. $1,000,000. Camp, Dresser & McKee, 6 Beacon St., Boston, Mass., consult. engrs. 1957-58 Constr. CD 6/16/47.

▲ **N. C., Fayetteville**—City, voted bonds Feb. 23, sewage treatment plant, $2,000,000. CD 11/30.

BRIDGES

TENNESSEE—State Hy. Dpt., Nashville,
Shelby Co.—bridge over Mississippi River, Auction St., Memphis, O. $500,000. Modjeski & Masters, State St. Bldg., Harrisburg, Pa., consult. engrs.

STREETS AND ROADS

▲ **Ga., Decatur**—Bd. Comrs. DeKalb Co., Court House, bond election May 15, resurfacing and widening public roads, $5,500,000. CD 4/14/52.

▲ **INDIANA**—Indiana State Hy. Comm., State House Annex, Indianapolis,
Marion Co.—expressway, Madison Ave., Indianapolis from Southern Ave. to Delaware St., and bridge, overpass carrying 4 tracks, widening, channeling of Morris St. to provide access route. $5,500,000. M. L. Hayes, state hy. engr.

▲ **NEW YORK**—Bureau Contracts & Accounts, The Gov. Alfred E. Smith State Office Bldg., Albany,
Chemung Co.—reconstr. approx. 6 mi. Rte. 328 between Penn State Line and intersection of Rtes. 14 and 328 at Bulkhead Junction, FAI Proj. $1,000,000.

▲ **Tex., Houston**—City, City Hall, Lincoln-Studewood Montrose Street connections, incl. concrete, steel underpass under T&NO RR tracks, paving, storm sewers, $1,250,000. Lockwood, Andrews & Newman, 1010 Waugh St., consult. engrs. CD 3/23.

▲ **BRITISH COLUMBIA**—Federal Dpt. P. Wks., Hunter Bldg., Ottawa, Ont., and B. C. Dpt. P. Wks., Parliament Bldgs., Victoria, B. C.
Stewart—250 mi. road from Stewart to Cassiar. $12,000,000. CD 7/21/43.

AIRPORTS

▲ **Mich., Detroit**—TERMINAL BLDG.—Wayne Co., Bd. Rd. Comrs., 726 City-County Bldg., Zone 26, 3 story, terminal bldg., hotel, Detroit-Major Airport, $8,363,814. CD 1/4/55.

▲ **N. Y., Idlewild**—TERMINAL—Pan American World Airways, 28-19 Bridge Plaza, Long Island City, plans by Ives, Turano & Gardner, 65 E. 55 St., New York, Zone 22, terminal with umbrella ramp west of Arrival Bldg. at N. Y. International Airport. $8,000,000. Tippetts, Abbett, McCarthy & Stratton, 62 W. 47 St., New York, Zone 19, engrs. Constr. in 1957. CD 2/25/53.

▲ **N. Y., Idlewild**—HANGAR—Port of New York Authority 111 Eighth Ave., New York, Zone 11, hangar and related facilities on 7 acre site west of Pan American Hangar at N. Y. International Airport for use of Swiss Air Transport Co. $1,000,000. CD 4/27/44.

LATIN AMERICA

▲ **Venezuela, Maracaibo**—Instituto Nacional de Obras Sanitarias, Div. de Acueductos, Edificio Las Mercedes, Esquina Tienda Honda, Caracas, D.F., Venezuela, plans water distr. expansion, incl. 2.5 m.g. reservoir, compensating tank, pumping station for pressure maintenance and new pipe line. $3,000,000.

(Continued on page 95)

Offices of American Hardware Mutual Insurance Company, Minneapolis, Minnesota, showing Acousti-Celotex Celotone* Fissured Mineral Fiber Tile installed with lighting and air conditioning components. **Architects:** Thagshav & Cerny, Inc. **Acoustical Contractor:** Insulation Sales Company.

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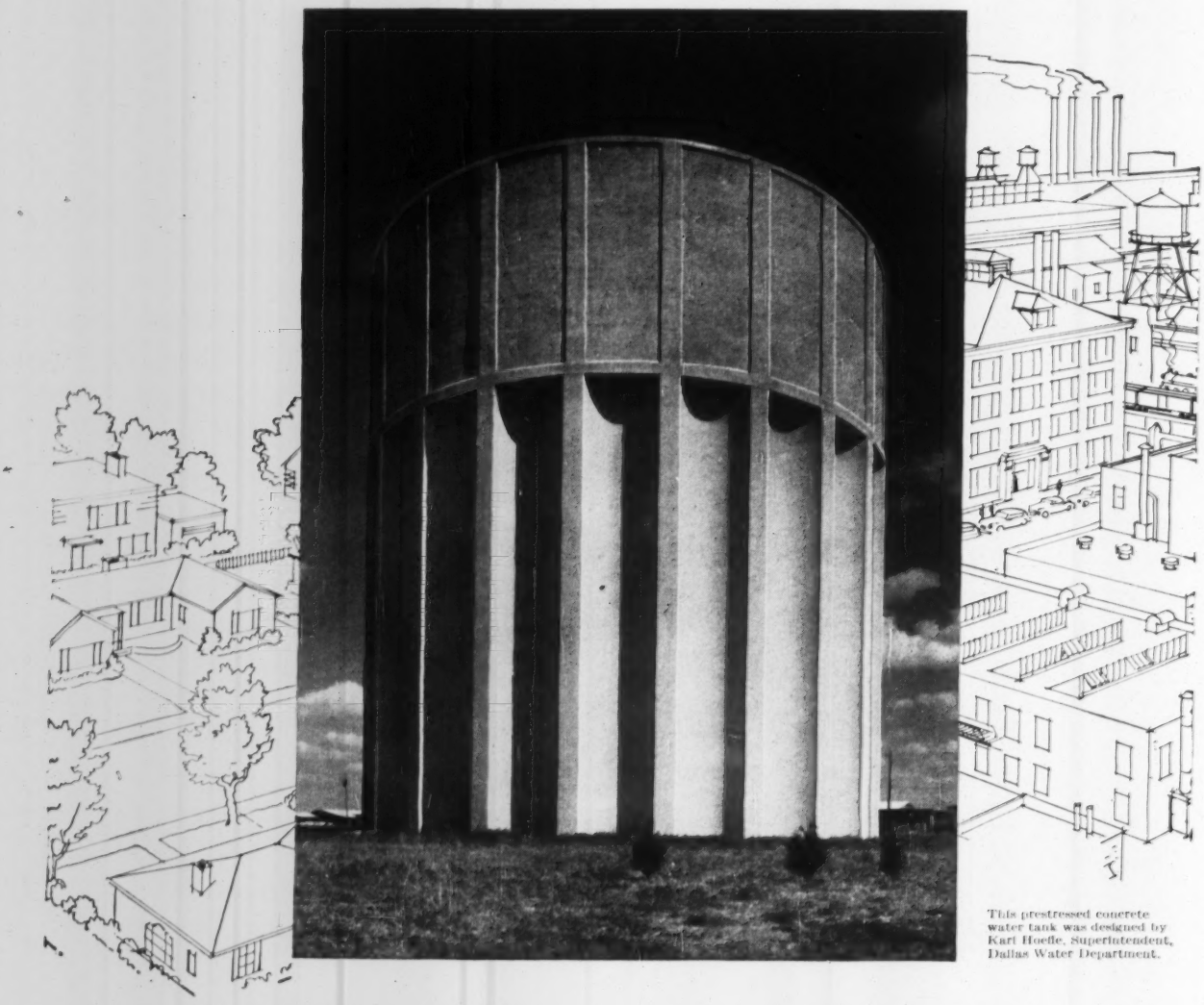

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(Continued from page 92)

PUBLIC BUILDINGS

▲ **Calif., Auburn**—SCHOOLS—Placer Joint Union High School Dist., votes $2,600,000 bonds, remodel and addns. to Auburn School, and constr. 4 high schools, in Colfax, Loomis and Penryn areas. CD 10/2.

Calif., Livermore—SCHOOL—Livermore Elementary School Dist., c/o Supt., P. O. Box 472, plans by Anderson & Simonds, 2800 Park Blvd., Oakland, Marylin Ave. Elementary School. $662,757. CD 10/9.

Calif., Los Angeles—LABORATORY—City Bd. P. Wks., City Hall, plans by Balch, Bryan, Parkins & Hutchason, 2933 Rowena Ave., 30,000 sq. ft. reinforced brick, concrete slab, Bureau of Standards Testing Laboratory, $500,000.

Calif., Napa—SCHOOL—Napa Union High School Dist., c/o Supt., Jefferson St. and Park Ave., plans by Donald S. Macky, 1444 Webster St., Oakland, Silverado Junior High School, strescrete walls, concrete slab floors, frame interior walls, $800,000. John M. Sardis, 347 Clay St., San Francisco, consult. engr.

▲ **Calif., Redwood**—HOSPITAL—Sequoia Hospital Dist., c/o Secretary, Whipple Ave. and Alameda St., plans by Stone, Mulloy, Marraccini & Patterson, 619 California St., San Francisco, 134 bed hospital addn. $2,925,000. CD 10/8.

Conn., New Canaan—SCHOOL—City, City Hall, elementary school, Ponus Ridge, $700,000.

▲ **Conn., New Haven**—SCHOOL—City, City Hall, Trade school, $1,000,000.

▲ **Conn., Windsor**—SCHOOL—Town, plans by Louis J. Drakos, 998 Farmington Ave., West Hartford. Center Dist. Jr. High School, Park Ave. $1,500,000. CD 3/16.

▲ **Ga., Decatur**—COURT HOUSE, etc.—Bd. Comrs. DeKalb Co. Court House, Decatur, bond election May 15, court house annex, $3,500,000; hospitals $1,405,000.

▲ **Ill., Skokie**—SCHOOL—School Dist. 65, plans by Ganster & Henninghausen, 317 Howard St., Evanston, Timber Ridge Elem. School, Davis St. and Samoset Blvd. $1,169,000.

† **La., New Orleans**—TRAINING CENTER—U. S. Eng., Santa Fe Bldg., Galveston, Tex., plans by Ricciuti Associates, and Gullatt, Lodal & Assocs., archts.-engrs., 521 Royal St., U.S.A.R. Training Center, $550,000.

▲ **La., Ruston**—STUDENT CENTER, etc.—Louisiana Polytechnic Institute, Dr. E. L. Ropp, pres., Ruston, plans by Neild, Somdal & Assocs., 960 Jordan St., Shreveport, student center, $450,000; Dormitory No. 1, $650,000; Dormitory No. 2, $700,000. CD 8/22.

▲ **Mass., West Tisbury**—SCHOOL—Marthas Vineyard, Regional High School Dist., Marthas Vineyard, plans by Perley F. Gilbert & Assoc. Inc., Sun Bldg., Lowell, school, $1,000,000. Constr. in 1958.

▲ **Minn., Minneapolis**—SCHOOL—Bd. Educ., H. Held, archt. engr., 807 N. E. Broadway, Junior High School area between Knox and Irving Aves. North and between Fifth and 51 Ave., $1,500,000.

▲ **Mich., Kalamazoo**—SCHOOL—State, A. N. Langius, dir. State Bldg. Dpt., Lewis Cass Bldg., Lansing, state high school for training of university teaching students, Western Michigan University, $3,500,000.

▲ **Mich., Rochester**—HOSPITAL—Rochester Hospital, Hilburn L. Carpenter, chn. Steering Com., Rochester, hospital to serve Rochester, Troy and Avon and Oakland Twps. $2,000,000.

Mo., Grant City—SCHOOL—Worth County School Dist. R-1, Chas. H. Shaffner, supt. Schools, defeated $590,000 bonds Apr. 2. Junior-Senior High School, Terrell & McCall, 1016 Baltimore Ave., Kansas City 5, Mo., archts. CD 3/19.

▲ **Mo., Warrensburg**—MUSIC—Central Missouri State College plans by Everitt & Kelets, R. A. Long Bldg., Kansas City, Mo. Music and Applied Arts Bldg. $1,250,000.

▲ **Mont., Butte**—SCHOOLS—Butte School Dist., voted $2,459,380 three elementary schools, repairs and addns. to existing schools.

▲ **Nebraska**—GENERATING PLANT—Central Nebraska Public Power Irrigation Dist., 1513 W 2 St., Hastings, 100,000 kw. single-unit steam electric generating plant and related facilities near Lexington. $17,000,000.

N. H., Hobbs—SCHOOLS—Independent School Dist., elementary school, $500,000; elementary school addns., $350,000.

N. J., Eatontown—AUTO INSPECTION and DRIVER EXAMINATION CENTER—State House Comn., Div. Motor Vehicles, State House, Trenton, concrete, steel, auto inspection and driver examination center, on 13 acre tract formerly owned by Old Orchard Country Club, Eatontown, on Monmouth Park Hy. $624,000.

▲ **N. J., Trenton**—SCHOOLS—Hamilton Twp. Bd. Educ., 2069 Greenwood Ave., plans by Mickelwright & Mountford, 90 E. Stuyvesant Ave., Yardville Elementary School addn. $110,000, Steinert School addn. $900,000, plans by Kramer, Hirsch & Carchidi, 115 W. State St., Trenton, elementary school for Mercerville-Hamilton Square area, $450,000, Hamilton Township High School, $850,000, all above work in Hamilton Twp. Referendum vote on May 28. CD 12/13.

N. Y., Brighton—ARSENAL—State National Guard, The Gov. Alfred E. Smith State Office Bldg., Albany, plans by Austin & Co., 16112 Euclid Ave., Cleveland 12, O., arsenal 1984 Brighton-Henrietta Rd. $750,000.

N. Y., East Meadow—LIBRARY—East Meadow Library Bd., referendum vote on May 8, air-conditioned library, $526,000. CD 2/8.

▲ **N. Y., Kenmore**—SCHOOL—Kenmore Union Free School Dist., Kenmore, $4,900,000 bond election May 27, high school, Fenno-Reynolds, McNeill, 2000 Sheridan Dr., archts.

▲ **N. Y., New York**—HEALTH CENTER—Dpt. P. Wks., Municipal Bldg., Zone 7, plans by Harry M. Prince, 101 Park Ave., New York, Zone 17, Proj. HL-34,

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N. Y., Old Bethpage—SCHOOL—Bd. Educ., appropriation voted at referendum on Mar. 23, Old Bethpage Grade School addn. $750,000. CD 8/19/55, under LB.

▲ N. Y., Port Washington—SCHOOL—Bd. Educ., plans by Eggers & Higgins, 100 E. 42 St., New York, Paul D. Schreiber High School addn. $1,355,000.

▲ N. Y., West Hempstead—SCHOOL—Union Free School Dist. No. 27, town of Hempstead, Junior Senior High School, 400 Nassau Blvd., defeated $2,980,000 referendum vote on Apr. 6, Junior High School adjoining existing Junior-Senior High School, on Nassau Blvd. CD 3/25.

▲ O., Lebanon—CORRECTIONAL INSTITUTION—Ohio Dpt. Mental Hygiene & Correction, State Office Bldg., S. Front St., Columbus, plans by Bellman, Gillett & Richards, 518 Jefferson St., Toledo, and LaPierre & Litchfield, 292 Madison Ave., New York, N. Y., Phase No. 1, administration bldg., chapel, reception bldg., kitchen, dining area, segregation bldg. and classrooms at correctional institution. CD 4/24/56.

▲ O., Willoughby—SCHOOLS—Willoughby-Eastlake School Bd., Willoughby, voted $3,915,000 bonds, Apr. 9, North High School impres. $570,000; South High School $1,400,000; Willowick Junior High School $900,000; school on Vegas property in Eastlake $550,000. CD 12/19.

▲ Pa., Cornwells Heights—SCHOOL—Bensalem Twp., School Auth., plans by H. F. Everett & Assocs., Commonwealth Bldg., Allentown, junior High school, Hulmeville Rd. $1,000,000.

Tex., Beeville—HOUSING—City, Public Housing Auth., c/o E. J. Spielhagen, Beeville, 90-unit, low-cost housing. $750,000.

▲ Tex., Clarendon—SCHOOL—Clarendon Independent School Dist., elementary school, $375,000; Junior High School, $750,000 Senior High School, $750,000. CD 1/11/55.

▲ Tex., Dallas—SCHOOL—Dallas Independent School Dist., 3700 Ross St., plans by Peyton G. Cooper, Gibraltar Life Bldg., Rob. C. Hill Junior High School, Easton Rd. and Northcliffe $1,250,000. CD 12/15/54.

Tex., Elderville—SCHOOL—Elderville Common School Dist., E. R. Williams, supt., Elderville, voted bonds Mar. 9, school, $605,000. Smith, Warder & Yost, Longview, archts.

Tex., Houston—PLANT—City, City Hall, fertilizer plant, enlargement, at North Side Sewage Treatment Plant, on Lockwood Dr. north of Buffalo Bayou. $750,000. John G. Turney, 2502 S. MacGregor Way, consult. engr.

Tex., Plainview—SCHOOL—Plainview Independent School Dist. plans by Wyatt C. Hedrick, T&P Bldg., Fort Worth, Junior High School, $625,000. Voted bonds Apr. 6. CD 4/11.

Vt., Burlington—BUILDING ADDNS., etc.—University of Vermont, and State Agricultural College, 85 South Prospect St., plans by Freeman, French & Freeman, 158 Bank St., Burlington and Skidmore, Owings & Merrill, 575 Madison Ave., New York, N. Y., Old Mill Bldg. addn., alterations, new heating plant, classrooms and offices. $715,000. Bids in May.

Va., Falls Church—SCHOOL—Falls Church Bd. Educ., 1057 W. Broad St., plans by McLeod & Ferrara, 1200 18th St. N.W., Wash., DC., George Mason High School addn. $577,000.

▲ Tex., Raymondville—HOUSING—Willacy Co. Housing Authority, c/o Courthouse, 100 low-cost housing at Port Mansfield, $1,000,000.

▲ Wis., La Crosse—HOUSING—La Crosse Housing Authority plans by Hackner, Schroeder & Assocs., 411 Rivoli Bldg., 75 unit housing. $1,000,000.

Ont., London—HOSPITAL, etc.—Bd. Trustees Victoria Hospital, J. A. Chapman, chn., London, plans by Gordon Glover, Victoria Hospital, London, 3 story, basmt., 120x120 ft. brick, steel, isolation hospital and stores bldg. $500,000. CD 2/2/45.

COMMERCIAL BUILDINGS

▲ Calif., Fresno—HOTEL, etc.—Owner, c/o J. F. Jacobson, 4085 N. Safford Ave., motel, convention hall with roof helicopter port. $5,000,000.

▲ Calif., Long Beach—APARTMENT—Circle Gardens Corp., 6691 Paramount Blvd., plans by Hugh Gibbs, 441 E. 1st St., 2 story, 1,040 sq. ft., frame, stucco and siding, 126 unit apartment development, $1,000,000.

Conn., New Haven—RESEARCH WING—Yale University, 119 College St., plans by Douglas Orr, 111 Whitney Ave., 4 story, 55x100 ft. research wing, Sterling Hall of Medicine, $800,000. Henry A. Pfisterer, 111 Whitney Ave., consult. engr. Hubbard, Lawless & Blakeley, 110 Whitney Ave., engrs. CD 4/3.

Conn., Taftville—CHURCH—Sacred Heart R. C. Church, Providence St., plans by Lucas E. Bannon, 262 Glen Rock Ridge, Glen Rock, N. J., rebuilding solid brick church, $520,000. Edward B. Bushka, 69 Gillett St., Hartford, consult. engr. CD 12/19.

Fla., Homestead—HOTEL—National Park Hotel, Inc., c/o Earl V. Wolfe, archt., 7219 Red Road, South Miami, 2 story, 219x204 ft., concrete block, L-shaped National Park Hotel, S.E. 8 St. and U. S. Hy. No. 1, $500,000. W. C. Gorman, 2296 Coral Way, Miami, structural engr. W. J. Marsh, 3020 S.W. 15 St., Miami, electrical engr. Robert L. Whitman, 814 S.W. 27 Ave., Miami, mech. engr.

Fla., Lakeland—SHOPPING CENTER—Public Super Markets, Inc., New Tampa Hy., plans by Donovan Dean & Assocs., 2011 S. Florida Ave., 1 story, 160x857 ft., concrete block, steel Southgate Shopping Center. $750,000.

▲ Fla., St. Petersburg—APARTMENT—John Ruff, 100 W. 22 St., Baltimore, Md., plans by Knox & Justice, 265 108 Ave., Treasure Island, 10 story 48x200 ft. rein.-con., steel apartment with penthouse and swimming pool. $1,500,000. Britt-Curley & Assocs., 3621-B Henderson Blv., Tampa, consult. engrs. CD 3/27.

Ind., Collegeville—DORMITORIES—St. Joseph's College, Collegeville, plans by Frank Fischer, 848 Milroy Ave., Rensselaer, Ind., two dormitories. $680,000. CD 4/9.

▲ Ia., Ottumwa—HOSPITAL—St. Joseph Hospital, Ottumwa, hospital addn., $1,200,000.

Md., District Heights—SHOPPING CENTER—A. Lloyd Goode & David Clark, c/o Louis Asbury Jr., archt., 121 Brevard Court, Charlotte, N. C., brick, concrete, steel shopping center, incl. 70 stores, $750,000-$1,000,000.

▲ Mass., Brighton—BUILDING—St. John's Seminary, Brighton, plans by Joseph Gregory McGann, 123 Fairfield St., Fairfield, brick, stone bldg. to accomodate theology students, $1,000,000.

▲ Mass., Cambridge—DORMITORY—Harvard College, Cambridge, plans by Shepley, Bulfinch, Richardson & Abbott, 1 Court St., Boston, "Eighth House" Dormitory, Mt. Auburn, DeWolfe and Plympton Sts., $5,000,000. CD 4/4.

▲ Mich., Detroit—SCHOOL—Merrill-Palmer School, Dr. Pauline Wilson Knapp, dir., 71 E. Ferry Ave., Merrill-Palmer School. $2,500,000.

Minn., Hoyt Lakes—SHOPPING CENTER, etc.—Parteidge Lakes Shopping Center, Hoyt Lakes, plans by E. R. Melander, 603 Alworth Bldg., Duluth, shopping center, motel $600,000.

▲ N. J., Longport—RESIDENTIAL DEVELOPMENT, etc.—Seaview Harbor, Inc., 7917 Ogantz Ave., Phila., Pa., residential development, also commercial development, incl. shopping center, motel. $1,000,000.

▲ N. J., Morristown—OFFICE—Jersey Central Power & Light Co., 501 Grand Ave., Asbury Park, office, 8 acre tract, Madison Ave. west of Punch Bowl Rd. $1,500,000.

N. Y., Brooklyn—APARTMENT—Regent Leasing Corp., 97-27 64 Rd., Rego Park, plans by Jack Brown, c/o owner, 6 story apartment, 80 units, 1035 Clarkson Ave. $850,000.

▲ N. Y., New Rochelle—SHOPPING CENTER—New Rochelle Development Corp., c/o Boak & Raad, 175 Fifth Ave., New York, shopping center, hotel, two office bldgs., garage, railroad station, and relocation of freight yards, $22,000,000. Greenhut & Tuffel, 2 Columbus Circle, New York, consult. engrs. CD 8/15.

▲ N. Y., Saratoga—DORMITORY—Skidmore College, Saratoga, plans by Henry Blatner, 11 N. Pearl St., Albany, dormitory and dining facilities. $1,327,000.

▲ O., Beachwood—SHOPPING CENTER—Visconsi & Assocs., 6867 Pearl Rd., Cleveland, Zone 30, plans by Rudolph J. Grosel, The Arcade, Cleveland, Zone 14, 350,000 sq. ft. brick, masonry shopping center, Kinsman Rd., east of Green Rd. $5,000,000.

O., Canton—COMMUNITY CENTER—Jewish Community Federation, 1528 Market Ave., Jewish Community Center on 15-acre site, between 25th and 30th Sts. N.W. $500,000.

O., Centerville—HOMES—Zeiger Constr. Co., Whipp Rd., Dayton, 65 homes in Ratnday View, Hills area. $750,000.

▲ O., Cincinnati—HOMES—R. W. Norris, 3159 Harrison Ave. 84 one floor, brick, bsmnt. homes, Ebenezer and Lawrence Rds. $1,350,000. Edward Niemeier, 3818 N. Bend Rd., consult. engr.

▲ O., Cleveland—HOSPITAL—Jewish Convalescent Hospital, 18704 Harvard Rd., Zone 22, plans by Dalton-Dalton Assoc., The Arcade, Zone 14, 3 story, 100-bed chronically ill and convalescent patients hospital on grounds of Mount Sinai Hospital on E. 105 St. $1,906,000.

▲ O., Lorain—SHOPPING CENTER—Abe Pickus, 20300 Miles Ave., Cleveland, Zone 29, 100,000 sq. ft. brick, masonry shopping center on 50-acre site, Colorado and Root Rd., with 1,000 car parking area. $2,000,000.

▲ O., Mayfield Heights—SHOPPING CENTER—Visconsi & Assocs., 6867 Pearl Rd., Cleveland, Zone 30, plans by Rudolph J. Grosel, The Arcade, Cleveland, Zone 41, 350,000 sq. ft., brick, masonry Eastgate Shopping Center addn. $5,000,000.

▲ Okla., Oklahoma City—MOTEL—Horace S. Jones, 404 N.E. 48th St., 18, 300 unit air-conditioned motel, 2500 N.W. 39th St. $1,500,000.

▲ Tex., Amarillo—SHOPPING CENTER—Consolidated Investment Co., Inc., Washington St., plans by Rob. E. Hucker & Assocs., Earl W. Sharge, Johnson Bldg., Amarillo, Tex., 1300x290 ft., masonry, Palo Duro Shopping Center. $2,500,000.

▲ Tex., Carrollton—SHOPPING CENTER—Sol. M. Minzer & Victor Frankfurt, c/o Tower Petroleum Bldg., Dallas, shopping center at Belt Line Rd. and Josey Lane, in Carrollton Highlands. $1,000,000.

▲ Tex., Dallas—HEADQUARTERS—Southern Baptist Convention, c/o Relief & Annuity Bd., c/o Baptist Bldg. Erway and San Jacinto Sts., plans by Thomas, Jamesor & Merrill, 820 N. Harwood St., Dallas, 6 to 15 story structural steel frame masonry, headquarters bldg. $1,600,000. CD 4/4.

Tex., El Paso—DWELLINGS—Hilloday Homes, Inc., 8940 Mt. Delano Dr., 52 brick on concrete slab dwellings. $520,000.

▲ Tex., El Paso—CHILDRENS HOME, etc.—Lee Moor Children's Home Trust Estate, c/o State National Bank

(Continued on page 99)

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2. Bituminous Materials Co. *Metairie, Louisiana* Serving Alabama, Mississippi, and Louisiana
3. Asphalt Products Co., Inc. Powell Ave., *Nashville 4, Tenn.*
4. Bituminous Materials Co. P. O. Box 267, *Terre Haute, Ind.*
5. Wabash Valley Asphalt Co. *Terre Haute, Indiana*
6. Brookman Construction Co. 17th & Gharkey Sts., *Muncie, Ind.*
7. Fauber Construction Co. *Lafayette, Indiana*
8. Asphalt Materials & Construction, Inc. 960 E. 22nd, *Indianapolis 2, Ind.*
9. Ready-Mix Asphalt, Inc. P. O. Box 882, *Fort Wayne 6, Ind.*
10. Doherty and Swearingen Co. 53 Main St., *Yarmouth, Maine*
11. James Huggins & Sons, Inc. Medford & Commercial Sts. *Malden 48, Massachusetts*
12. Albany Asphalt & Aggregates 75 State St., *Albany, New York*
13. Knight Paving Products, Inc. 1655 Union Rd., *Gardenville, N. Y.*
14. Knight Paving Products, Inc. Vine Street, *Ithaca, New York*
15. Knight Paving Products, Inc. 1980 East Avenue, *Rochester 10, N. Y.*
16. Walsh & Kelly R. R. #2, *Gary, Indiana*
17. Bituminous Materials Co. 416 S. Water St., *Jackson, Mich.*
18. Bituminous Materials Co. 318 Atlantic St., *Bay City, Mich.*
19. Emulsions, Inc. *Lawrenceville, Illinois*
20. Bituminous Materials & Supply Co. 415 Maple St., *West Des Moines, Iowa*

Plants:

21. *Spirit Lake, Iowa*
22. *Iowa City, Iowa*
23. *Menlo, Iowa*
24. Emulsified Asphalt Co. *Kuttawa, Kentucky*
25. Bituminous Materials Co. *Escanaba, Michigan*
26. Knight-Bitumen Corp. *Watertown, New York*
27. Seaco, Incorporated 2700 Industrial Drive, *Columbia, S. C.*

Eastern Representative: John A. Dow 157 Church St., *New Haven 10, Conn.*

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General Contractor: Manhattan Construction Co., Muskogee, Okla.
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(Continued from page 96)

Bldg., c/o Walter Scott Trust Officer, El Paso, plans by Carroll & Daeuble, 1001 E. Yandell Blvd., children's home and orphanage, $3,000,000.

▲ **Tex., Houston**—HOTEL—Rice Hotel, Main and Texas Sts., 5 story hotel addn., incl. swimming pool, $3,000,000. CD 4/24/52.

Tex., Lubbock—CHURCH—First Methodist Church, 1411 Broadway, brick, tile, steel church expansion. $900,000.

Tex., San Antonio—SCHOOL—Ursuline Academy, 1108 Navarro St., grade and high school for Catholic Girls, on site off Vance-Jackson Rd. $500,000. CD 2/10/54.

▲ **Wis., Milwaukee**—OFFICE, etc.—Allen Bradley Co., 137 W. Greenfield Ave., plans by Scott Kloppenburg & Scott, 5623 N. Lake Dr., 8 or 9 story office-research building. $5,000,000.

INDUSTRIAL BUILDINGS

▲ **Calif., Fontana**—PLANT—Kaiser Steel Div., Henry J. Kaiser Co., 1924 Broadway, Oakland, plant addns. $81,000,000.

Fla., Oldsmar—FACTORY, etc.—Sperry-Rand Corp., 30 Rockefeller Plaza, New York, N. Y., plans by C. Dale Dykeman, 16901 Gulf Blvd., N. Redington Beach, St. Petersburg, 75,000 sq. ft. factory and office, State Road 584; $500,000. Britt-Curley Assocs., 3621-B Henderson Blvd., Tampa, consult. engrs. CD 4/12.

▲ **Ill., Metropolis**—PLANT—Allied Chemical & Dye Corp., 40 Rector St., New York, N. Y., uranium salts mfg. plant for use by atomic energy plants $10,000,000-$14,000,000.

▲ **Ind., Indianapolis**—TERMINAL, etc.—Greyound Bus Lines, Inc., Blue Shield Bldg., plans by Arrasmith & Tyler, Madrid Bldg., Louisville, Ky., 2 story, 70,000 sq. ft. terminal, shops and offices, between Illinois and Capitol Ave. and E. Wabash and Ohio Sts. $1,600,000. Daggett-Naegle & Daggett, 567 W. Westfield Blvd., superv.-consult. engrs.

Iowa, Davenport—WAREHOUSE—Westinghouse Electric Corp., 2515 Dean St., Des Moines, 60,000 sq. ft. warehouse, $750,000.

▲ **Kan., Topeka**—PLANT—Goodyear Tire & Rubber Co., 1144 E. Market St., Akron, O., plans by Giffels & Vallet, 1000 Marquette Bldg., Detroit, Mich., 2 story, 50x100 ft., 130,000 sq. ft. plant addn. $1,000,000.

▲ **N. J., Berkeley Heights**—LABORATORY—C. F. Braun & Co., 45 Rockefeller Plaza, New York, N. Y., plans by Voorhees, Walker, Smith & Smith, 101 Park Ave., New York, N. Y., 40,000 sq. ft. engineering laboratory, 40 acre tract on Diamond Hill Rd. and Mountain Ave. $1,200,000.

▲ **N. J., Newark**—POWER DISTRIBUTION STATION—Public Service Electric & Gas Co., 80 Park Pl., power distr. station at Plane and Willow Sts., $6,000,000.

▲ **O., Belpre**—PLANT—Kaiser Aluminum & Chemical Co. (Henry J. Kaiser), 1924 Broadway, Oakland, Calif., 45,000 sq. ft. aluminum foil processing plant, near here. Over $2,000,000.

▲ **O., Cuyahoga Heights**—PLANT—Tremco Mfg. Co., 8701 Kinsman Rd., Cleveland Zone 4, plant, 9 acre site, east side of E. 49 St. $1,500,000.

O., Middletown—FACTORY, etc.—Aeronca Mfg. Corp., John A. Lawler, pres., 50,000 sq. ft. factory addn., 10,000 sq. ft. office bldg. $600,000.

▲ **Tex., Wichita Falls**—REFINERY—Continental Oil Co., c/o 1300 Main St., modernization refinery near here. $1,500,000.

▲ **Ont., Toronto**—REFINERY—Canada & Dominion Sugar Co., Ltd., 91 Tecumseh St., plans by Gordon S. Adamson & Assocs., 52 St. Clair Ave. E., sugar refinery expansion incl. processing plant, char house, packaging house, raw sugar storage shed and boiler house, $6,000,000. H. G. Acres & Co., Ltd., 1259 Dorchester Rd., London, consult. engrs.

▲ **Ont., Toronto**—WAREHOUSE—Lever Bros. Ltd., 299 Eastern Ave., 2 story, masonry, steel, rein.-con. warehouse, East Don Roadway east side north of Keating St. $1,030,000. CD 2/21/49.

UNCLASSIFIED

▲ **Calif., Santa Monica**—AMUSEMENT PIER, etc.—Pacific Ocean Park, Inc., (CBS Television-Western Div. and Los Angeles Turf Club, Inc.) 258 W. Huntington Dr., Arcadia, plans by Pereira & Luckman, 9220 Sunset Blvd., Los Angeles, amusement pier, oceanarium, shops, amusement rides at Ocean Park, $5,000,000. CD 1/23.

▲ **Ga., Decatur**—PARK—Bd. Comrs. DeKalb Co., Court House, Decatur, bond election May 15, park development, $1,000,000. CD 4/14/52.

Michigan—RURAL DISTRIBUTION LINES—Western Michigan Electric Co.-operative, Scottsville, 133 mi. rural distr. lines, 21 mi. 44 kv transmission line, sys. imprvs., Mason Co. $600,000. CD 11/8.

▲ **Minnesota**—RURAL DISTRIBUTION LINES—East Central Electric Assoc., Braham, 145 mi. rural distr. lines, sys. imprvs., Kanabec Co. $1,526,000. CD 11/26/52.

Minn., Edina—GOLF COURSE—Village, Gretchen S. Alden, clk., plans by R. D. Harris, landscape archt.-engr., 644 N. Michigan Ave., Chicago 11, Ill., 414 acre golf course and recreation area in southwest corner of village, plans by A. Harrison & Assocs., landscape archt., Ames, Iowa, constr. 10 other parks and playgrounds $650,000. CD 2/13.

Oklahoma—NATURAL GAS GATHERING LINES—Kansas-Nebraska Natural Gas Co., Phillipsburg, Kan., 62 mi. various-sized natural gas gathering lines in Camerick field, Texas Co. $915,000.

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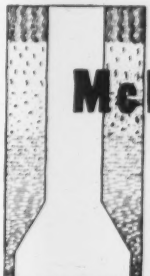

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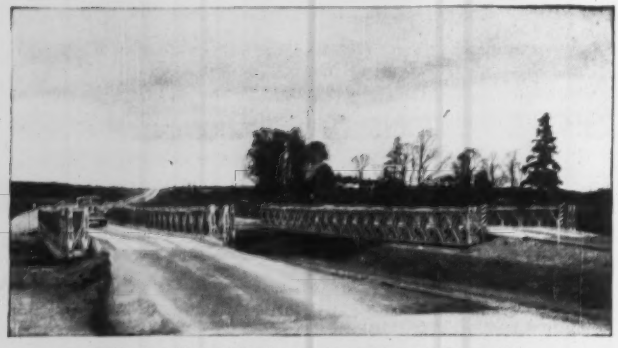

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Office and factory building of Thomas A. Shutz Company, Morton Grove, Illinois. Rigid frames are spaced at 16'. Architect: Seymour S. Goldstein, Chicago. General contractor: Stromberg Construction Co., Chicago.

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NEW ENGLAND

HEAVY CONSTRUCTION—BA

▲† **Massachusetts**—BA 5/21—U. S. Eng., 150 Causeway St., Boston, flood control proj., Worcester area, Auburn and Millbury. $4,000,000-$5,000,000. Plans deposit $25, refundable. Justin & Courtney, 121 S. Broad St., Phila., Pa., engrs. CD 4/19.

BUILDINGS—BA

▲ **Conn., Winsted**—SCHOOL—BA 6/5—Regional School Dist. No. 7, 384 Main St., Regional High School for towns of Barkhamsted, Colebrook, Norfolk and New Hartford. $2,000,000. Plans deposit $50. Walter Crabtree, Jr., 195 Fern St., West Hartford, archt. CD 2/6, under LB.

HEAVY CONSTRUCTION—LB & CA

▲† **Merritt-Chapman & Scott Corp.**, 10 Village St., East Hartford, Conn., LB $6,904,174, est. $7,116,-126. Ball Mountain Dam, etc., West River Jamaica-Londonderry, Windham Co., CIVENG 19-016-73, VERMONT U. S. Eng., 150 Causeway St., Boston, Mass. Bids Apr. 23. CD 4/12.

▲ **MASSACHUSETTS**—Commonwealth of Mass., Dpt. P. Wks., 100 Nashua St., Boston.
Marinucci Bros. & Co., Inc., Bates Ave., Quincy, Mass. LB $5,729,384, est. $6,406,648. Southeast Expressway Sect. 5-U355 (1) Braintree and Quincy. Maurice A. Reidy and Clarkeson Engineering Co., 285 Columbus Ave., Boston, Mass., engrs. Bids Apr. 23. CD 4/2.

BUILDINGS—LB & CA

▲ **M. S. Kelliher Co.**, 294 Washington St., Boston, Mass. LB $1,900,685. West Junior High SCHOOL, MILTON, MASS. Town, Central Ave., Milton, Mass. Bids Apr. 18. CD 3/12.

MIDDLE ATLANTIC

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
BRIDGES
May 10, 24 Pennsylvania — May 16 New York
STREETS AND ROADS
May 10 Pennsylvania — May 14 New Jersey
May 16 New York

HEAVY CONSTRUCTION—LB & CA

▲ **West Delaware Tunnel Contractors**, (Johnson, Drake, & Piper, Inc., Winston Brothers Co., Tecon Corp., and Conduit & Foundation Co.), Roscoe, N. Y. LB $26,241,750. Contr. 454, 60,000 lin. ft. tunnel incl. Shaft 5, approx. 760 ft. deep and Shaft 6, approx. 780 ft. deep, located in towns of Rockland and Neversink, Sullivan Co.; LB $19,198,700, less 8%. Contr. 455, 42,000 lin. ft. tunnel, incl. Shaft 7, approx. 650 deep and tunnel outlet located in town of Neversink, Sullivan Co., easterly portion of the West Delaware Tunnel of Delaware System, NEW York. Bd. Water Supply, 120 Wall St., New York 5, N. Y. Bids Apr. 23. CD 3/29.

▲ **NEW YORK**—John W. Johnson, supt. Dpt. P. Wks., The Gov. Alfred E. Smith State Office Bldg., Albany, bids opened 4/21.

N. Y.—**John Arborio, Inc.**, West Cedar St., Poughkeepsie, N. Y., LB $616,766, est. $714,000. (2 bidders) constr. 2.09 mi. four-lane divided connecting hy. between Barnegat Rd. and Spackenkill Rd. near IBM factory incl. overpass to carry the new link over Rte. 9, complete traffic interchange facilities between Rte. 9 and new road Dutchess Co.

N. Y.—**Lane Construction Corp.**, 965 East Main St., Meriden, Conn., LB $10,514,399, est. $14,000,000. (9 bidders) constr. 7.96 mi. four-lane divided sect. of Berkshire Thruway and 4.76 mi. access roads, incl. traffic interchange near old Chatham, building of 11 hy. grade separation structures 4 stream bridges and 1 railroad grade separation structure, Columbia Co.

N. Y.—**Brunner Asphalt & Construction Inc.**, 237 Kensington Ave., Buffalo, N. Y., LB $1,310,305, est. $1,486,000. (4 bidders) wid'n resurf. 3.91 mi. sect. of Sheridan Dr. (Rte. 224) starting Two Mile Creek Rd. (County Rd. 524) and extending eastward to Parkhurst Rd., Erie Co.

N. Y.—**Sheridan Construction Corp.**, 3580 Sheridan Dr., Buffalo, N. Y. LB $160,805, est. $180,000. (3 bidders) resurf. 1.99 mi. sect. of Rte. 263 starting south of Rte. 270 intersection in Amherst and extending northeastward to French Rd., Erie Co.

N. Y.—**Robert C. Kramer**, Holland, N. Y., LB $741,971, est. $858,000 (7 bidders) resurf. 8.37 mi. sect. of Rte. 5 starting near Evans Center, north of Angola, extending northwestward to a point near Wanakah, Erie Co.

N. Y.—**Talarico Contracting Corp.**, 105 Fifth Ave., Herkimer, N. Y. LB $559,962, est. $677,009 (5 bidders) relocation 2.8 mi. sect. Rte. 29, constr. 0.79 mi. of access road, ¼ mi. west of Fonda, Johnstown and Gloversville R.R. grade crossing, west of Vails Mills and extending generally eastward, incl. constr. three span 133½ ft. bridge to carry Bridge St. (Schoolhouse Rd.) over Rte. 29 near Broadalbin High School, Fulton Co.

N. Y.—**Potter Dewitt Corp.**, Pavilon, N. Y., B $1,091,-428. est. $1,186,000. (6 bidders) wid'n. strengthening resurf. 13.26 mi. sect. of Rte. 33 starting at Erie-Genesee Co. line and extending northeastward through Corfu to Batavia City line, Genesee Co.

N. Y.—**Gull Contracting Co., & Horn Construction Co.**, Inc., 33-15 Lawrence St., Flushing, N. Y. LB $15,-547,121. est. $16,085,000. (5 bidders) constr. 1.17 mi. six-lane divided sect. of Brooklyn-Queens Expressway and 0.73 mi. access and service roads from Concord St. to Flushing Ave. incl. 4,804 ft. viaduct between Navy St. and Grand Ave., entrance and exit ramps at Tillary St. and at Flushing Ave., Kings Co.

N. Y.—**Potter-DeWitt Corp.**, Pavilon, N. Y., LB $224,-650. est. $268,000. (4 bidders) reconstr. 0.34 mi. Rtes. 15 and -20 A in Lakeville incl. 53 ft. long bridge to carry Rte. 20A over Conesus Creek, Livingston Co. and 21 ft. long bridge to replace Rte. 15 bridge north of Lakeville, Livingston County.

N. Y.—**Rapone Contracting Corp.**, Hicksville, N. Y. LB $1,576,628. est. $1,749,000. (4 bidders) reconstr. portions of Rtes. 109 and 110 at intersection near Farmingdale involving 4.53 mi. on two main routes and 1.19 mi. of various access roads, Nassau and Suffolk Counties.

N. Y.—**Grefe & Brennan, Inc.**, Rockville Centre, N. Y. LB $489,346, est. $510,000. (5 bidders) drainage work to alleviate flooding conditions at various locations along Rte. 25 in town of Oyster Bay in Nassau Co. and in towns of Huntington, Smithtown, Brookhaven and Southold in Suffolk Co. involving 1.31 mi., Nassau and Suffolk Counties.

N. Y.—**Walter P. Blimm Co., Inc.**, 270 State Rd., Lockport, N. Y. LB $306,531, est. $340,000. (3 bidders) wid'n. resurf. 4.79 mi. sect. of Rte. 93 starting near Rte. 18 intersection east of Youngstown and extending eastward to Ransomville, Niagara Co.

N. Y.—**E. G. DeLia & Sons Constr. Corp.**, 30 Campion Rd., New Hartford, N. Y. LB $647,608, est. $678,000. (2 bidders) wid'n., straightening, resurf. 4.82 mi. sect. of Rte. 233 starting at Rte. 69 intersection in Stanwix and extending southward to State Thruway's overhead crossing near Westmoreland, Oneida Co.;

N. Y.—**Harris Grand**, 888 Montgomery St., Brooklyn, N. Y., LB $151,105, est. $182,000. (6 bidders) landscaping and roadside development work along 8.25 mi. Palisades Interstate Parkway in two sections from the N. J. State Line to Rte. 303 and from Rte. 59 to Rte. 45, Rockland Co.

N. Y.—**Edward Acker & C. L. Hough**, Selden, L. I., N. Y. LB $411,458, est. $470,000 (5 bidders) drainage work to alleviate flooding conditions at various locations along Rte. 25 in towns of Huntington, Smithtown and Brookhaven and along sect. of Rte. 24 in town of Babylon, involving 2.08 mi., Suffolk Co.;

N. Y.—**John Arborio, Inc.**, West Cedar St., Poughkeepsie, N. Y., LB $6,909,529, est. $7,811,000 (4 bidders) constr. 5.4 mi. four-lane divided Rte. 17 expressway and 10.72 mi. of access and service roads, starting in Bridgeville at west end of Neversink River Bridge and extending northwest of Rte. 17B intersection, incl. traffic interchange at Rte. 42, six hy. grade separation structures, 1 bridge and addnl. truck climbing lane along several portions of route, Sullivan Co.;

N. Y.—**Mount Vernon Contracting Corp.**, 439 North Terrace Ave., Mount Vernon, N. Y., LB $149,220, est. $153,000 (1 bidder) modification to railroad facilities and rerouting of communication lines in vicinity of railroad station at Rye adjacent to State Thruway, involving 0.89 mi., Westchester Co.

▲ **NEW YORK**—John W. Johnson, supt., Dpt. P. Wks., The Gov. Alfred E. Smith State Office Bldg., Albany, Bids opened 4/25.

N. Y.—**Thomas P. Spagnolettr Constr. Co.**, 14 Denton Rd., Binghamton, N. Y. LB $450,000, est. $486,000 (5 bidders) 4-span four-lane wide 260 ft. bridge and approaches to carry Genesee St. (Rte. 5) over Limestone Creek in Fayetteville, involving 0.36 mi., Onondaga Co.;

N. Y.—No bids received 4/25/57, Est. $2,004,000 superstructure for three span 448 ft. steel tied-arch bridge to carry the Penn-Canada Expressway over western edge of Oneida Lake east of Brewerton, involving 0.17 mi., Oswego Co.;

N. Y.—**Thalle Construction Co., Inc.**, Yonkers, N. Y., LB $91,783, est. $98,000 (1 bidder) bridge and approaches to carry Rte. 117 over a branch of Kisco River on southeast edge of Mt. Kisco, replacing a temporary structure built after floods of 1955, involving 0.11 mi., Westchester Co. CD 4/2.

N. Y.—Withdrawn. To be readvertised. Est. $539,000 (bidders) reconstr. 0.96 mi. sect. of Rte. 127 starting at Post Rd. about ½ mi. inside Mamaroneck and extending northeastward to Broadway in Harrison, Westchester Co.

N. Y.—**Westchester Asphalt Distributing Corp.**, White Plains, N. Y., LB $219,720, est. $236,000. (4 bidders) subsealing c. conc. 36.25 mi. various state hys. located in Cayuga, Cortland, Onondaga, Oswego, Seneca, Tompkins and Wayne Counties, Syracuse District. CD 4/2.

▲ **T & T Contg. Corp.**, 4814 Glenwood Rd., Brooklyn 3, N. Y. LB $2,504,281. (6 bidders) combined sewer in Flatlands Ave. (Fairfield Ave.) and Cleveland St.; grading Flatlands Ave. (Fairfield Ave.) and Cleveland St., BROOKLYN, N. Y. President Brooklyn Boro, Boro Hall, Brooklyn 1, N. Y. Bids Apr. 23. CD 4/5.

▲ **Thompson Constr. Co.**, 11 No. Pearl St., Albany, N. Y. CA $2,500,000. 3 story, 139,000 sq. ft. concrete headquarters for Mohawk Airlines, UTICA, N. Y. Oneida Co., Utica, N. Y. Bids Apr. 8. CD 3/12.

▲† **American Bridge, Div. U. S. Steel Corp.**, Suburban Station Bldg., Phila., Pa., CA $4,281,889. Summit Bridge over Chesapeake and Delaware Canal, New Castle Co., Del. and Cecil Co., Md., DELAWARE and MARYLAND, U. S. Eng., 2635 Abbottsford Rd., Phila., Pa. CD 4/1, under LB.

▲† **Terminal Constr. Co.**, State Hy. 17 and Moonache Ave., Wood-Ridge, N. J. and **Frouge Constr. Co.**, 141 North Ave., Bridgeport, Conn. CA $7,189,200. 500 Capehart housing units at Dover Air Force Base, DOVER, DEL. Procurement Officer, Dover Air Force Base, Dover, Del. CD 4/12.

BUILDINGS—LB & CA

▲ **Les-Cal Builders**, (Edward Leskowitz and John and Angelo Cali), Grove Ave., Morris Plains, N. J. CA Est. $7,000,000. 300 HOUSES on 175 acre tract to be known as Idlewild, MORRIS PLAINS, N. J. Sarrano Constr. Co., 400 Evergreen Ave., Cedar Knolls, N. J. Stephen J. Potter, 410 Colonial Ave., Union, N. J., archt.

▲ **Marshall Fachs Brunswick Knolls, Inc.**, 117 Fifth St., Perth Amboy, N. J. Owner Builds. $3,225,000. 190 HOMES, Browertown Rd. between How and Cozzens Lanes to be known as Brunswick Knolls, Inc., NORTH BRUNSWICK, N. J. M. Thomas Carr, 479 Brace Ave., Perth Amboy, N. J., engr.

▲ **Owner**, c/o Morton Lamm, agt., 160 Long Lane, Upper Darby, Pa. Separate Contracts. $8,500,000. RESIDENTIAL DEVELOPMENT, 340 units, Marple Twp., Lawrence Park area, BROOMALL, PA.

▲ **Levitt & Sons, Inc.**, Levittown, Pa. Separate Contracts. $2,330,000. RESIDENTIAL DEVELOPMENT, Highland Park sect., LEVITTOWN, PA.

▲ **Franklin Builders**, 1400 Silverside St., Wilmington, Del., Own Forces. $6,000,000. 250-300 HOUSES, Nottingham Green, NEWARK, DEL.

SOUTH

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
BRIDGES
May 10 Kentucky — May 16 Tennessee
STREETS AND ROADS
May 10 Kentucky — May 16 Tennessee

BUILDINGS—LB & CA

▲ **Ray M. Lee**, 1004 Edgewood Ave., Box 4655, Atlanta, Ga. CA $3,307,904. 360-bed HOSPITAL, LAKELAND, FLA. City, City Hall, Lakeland, Fla. Awarded Apr. 15. CD 3/26, under LB.

MIDDLE WEST

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
BRIDGES
May 7 Wisconsin — May 23 Michigan
May 15 Indiana
STREETS AND ROADS
May 7 Wisconsin — May 8, 15, 22 Michigan
May 14 Ohio

▲ **ILLINOIS**—BA 5/16—Illinois State Toll Hy. Comn., 20 N. Wacker Dr., Chicago.
Contract T-2-A, grading, drainage, paving, appurtenances, precast concrete, structural steel bridges 2.59 mi. from N.E. of Midlothian to pt. N.W. of 131 and Crawford Ave. in Alsip, $3,000,000.
Contract T-2-B, grading, drainage, paving, appurtenances, erecting precast concrete, structural steel bridges 3.30 mi. N.W. 131 St. extending northerly S. of 111 St., $4,000,000.
Contract T-2-C, grading, drainage, paving, appurtenances, precast concrete bridges 2.45 mi. S. of 11 St. extending northerly to S. of 95 St., $2,900,000. Porter, Urquhart, McCreary & O'Brien, 415 Frellinghuysen Ave., Newark 5, N. J., section engrs. CD 5/11.

▲† **O., Columbus**—HOUSING—BA About 6/20—U. S. Eng., Procurement Officer, Lockbourne Air Force Base, Columbus, 400 units of Capehart Housing at Lockbourne Air Force Base. $6,500,000. Extended date. Inscho, Brand & Inscho, 60 E. Broad St., archts. CD 1/22, under Commercial Buildings.

HEAVY CONSTRUCTION—LB & CA

▲ **ILLINOIS**—Illinois State Toll Hy. Comn., 20 N. Wacker Dr., Chicago.
rejected bids Apr. 4, Contract T-2-A, grading, drainage, paving, appurtenances, precast concrete and structural steel bridges 2.59 mi. from N.E. of Midlothian to point NW of 13 St. and Crawford Ave. in Alsip, Cook Co. CD 4/11, under LB.

▲ **ILLINOIS**—Illinois State Toll Hy. Comn., 20 N. Wacker Dr., Chicago.
Orr Constr. Co., 27 19 Pl., Chicago Heights, Ill., CA $2,238,380, Contr. T-3-B, grading, drainage, paving, appurtenances, precast concrete, steel bridges, 1.24 mi. beginning S. of A.T. and S.F. R.R. yards extending northerly to N. of 71 St. Bids Mar. 21, awarded Apr. 22. CD 4/11, under LB.

▲ **ILLINOIS**—Illinois State Toll Hy. Comn., 20 N. Wacker Dr., Chicago.
ISTHC—**Industrial Constr. Co. of Minneapolis**, 20 N. Wacker Dr., Chicago, Ill., CA $1,579,514 Contr. T-2-B, roadway for bridge across Ill. Central freight yards in Markham, exclusive of furnishing, erecting structural steel 0.335 mi.

(STEEL—Union Chemical & Materials Corp., 79 W. Monroe St., Chicago, Ill. CA $2,673,959. Contr. PIN-3, mfg. furnishing, del. 96,300 lin. ft. pre stressed concrete girders for use in 52 bridges between Aurora and Des Plaines. Bids Apr. 4, awarded Apr. 22. CD 4/11, under LB.

▲ **ILLINOIS**—Illinois State Toll Hy. Comn., 20 N. Wacker Dr., Chicago, terminated by mutual agreement to be redesigned and readvertised on Contract N-1-C, grading, drainage, paving 3.67 mi. beginning Station 745 extending to Station 906 plus; also concrete, steel bridges W. of Rockford, Winnebago Co. CD 2/18, under CA.

▲ **ILLINOIS**—Illinois State Toll Hy. Comn., 20 N. Wacker Dr., Chicago

Peter Kiewit Co. and Condon Cunningham Co., 4229 Lafayette Ave., Omaha, Neb., and Paschen Contrs., Inc., 2739 Elston Ave., Chicago, Ill., CA $3,231,086. Contr. T-4-A, 2-lane bridge structure paving only 0.91 mi. beginning 79 St. Exten. across tracks on Gulf Mobile and Ohio R.R. near Willow Springs. Bids Apr. 3, awarded Apr. 22. CD 4/17, under LB.

▲ **MICHIGAN**—State Hy. Dpt., Stevens T. Mason Bldg., Lansing. Bids opened Apr. 17.

Mich.—**Denton Constr. Co.**, 20415 Mack Ave., Grosse Pointe, Mich. LB **$1,665,841**, est. $1,700,000. 24 ft. dual c. conc. 3.286 mi. relocation of M-60 from M-60 north to US-12, F 38061 C1-R (F 436 1), Jackson Co.;

Mich.—**Corey & Hartwig**, Hadley, Mich. LB **$137,617**, est. $170,000. 23 ft. non skid surf. 2.971 mi. 4.09 on FAS Rte. 11 in Burmips, CS 3-58 C1 (S 737 2), Allegan Co.;

Mich.—**Globe Constr. Co.**, Kalmazoo, Mich. LB **$111,221**, est. $120,000. 22 ft., 44 ft. bit. aggregate US-12 south, CS 39-66 C2 (S 1379 2), Kalamazoo Co.;

Mich.—**Lake & Howell Constr. Co.**, Howell, Mich. LB **$190,525**, est. $230,000. 22 ft. b. conc. 7.143 mi. 4.12 on FAS Rte. No. 792 from 14 Mile Rd. to M-59, CS 63-99 C1 (S 757 3), Oakland Co.;

Mich.—**Loselle Constr. Co.**, 1555 Goddard St., Wyandotte, Mich. LB **$462,800**, est. $540,000. 24 ft. 44 ft. dual c. conc. 1.566 mi. M-218 from US-16 north, M 63011 C1-R, Oakland Co.;

Mich.—**Mid-America Eng. Corp.**, St. Joseph, Mich. LB **$229,714**, est. $280,000; b. conc. 13.278 mi. M-57 east from US-27, S 29021 C1-R (S 211 5) Part 1, S 29022 C1-R (S 211 5) Part 2, Gratiot Co.; LB **$94,145**, est. $120,000. b. conc. wid'n. 22 ft. b. conc. 2.998 mi. from Bailey Park entrance on M-78 northerly, b. conc. surf. at 20 St. and M-96 intersection in Battle Creek, M 13032 C1-R, etc., Calhoun Co.; LB **$229,880**, est. $280,000. C. conc. wid'n., 20 ft., 25 ft. b. conc. 8.661 mi. US-31 from West Olive north and Grand Haven, M 7001 4 C3-RN, etc., Ottawa Co.; LB **$99,728**, est. $150,000. 20 ft., 40 ft. b. conc. Class I 6.1 mi. US-31 from 1.9 mi. south of Muskegon Ottawa Co. line north to 1 mi. south of Muskegon Heights, M 61031 C1-R, M 61071 C1-R, etc., Ottawa and Muskegon Counties;

Mich.—**Midland Contg. Co.**, Midland, Mich. LB **$139,451**, est. $190,000. 18 ft., 20 ft. b. conc. 7.78 mi. M-20 from Bay city to Auburn and 0.201 mi. b. conc. US-10 from C. & O. R.R. crossing south along east limits of Midland, M 09041 C1-R, etc., Midland Co.;

Mich.—**Rieth-Riley Constr. Co.**, 837 Emmett St., Battle Creek, Mich. LB **$295,973**, est. $340,000. c. conc. wid'n., 46 ft. b. conc. 2.325 mi. M-78 from State to Union St. and from Wabash Ave. to Bailey Park entrance Battle Creek, U 13032 C2-U (U 144 10), etc., Calhoun Co.;

Mich.—**S. D. Solomon & Sons**, 3760 Elizabeth Lake Rd., Pontiac, Mich. LB **$113,985**, est. $160,000. aggregate base, b. conc. surf. 1.667 mi. M-60 relocation at intersection with M-99, M 13022 C1-R, Calhoun Co.;

Mich.—cancelled bids to have been opened Apr. 17, 30 ft., 40 ft. b. conc. 7.75 mi. US-16 Grand Trunk R.R. separation east of East Lansing east to Williamston, M 33682 C1-R, Ingham Co. Will re-advertise. CD 4/4.

▲ **MICHIGAN**—State Hy. Dpt., Stevens T. Mason Bldg., Lansing,

Carl Goodwin & Sons, Allegan, Mich. CA $2,647,121, est. $2,800,000. dual 24 ft. c. conc. 8.694 mi. on relocation of US-16 from M-100 to Portland, I 34044 C1-RN (I 04-2 1), etc., Clinton and Ionia Counties. CD 4/19, under LB.

BUILDINGS—LB & CA

▲ **Zehman-Wolf & Sherman**, 13484 Cedar Rd., Cleveland 18, O., CA Est. **$2,250,000**. first section of new SHOPPING CENTER, southeast corner of Lake and Lake Breeze Rds., SHEFFIELD LAKE, O. Shoreway Shopping Center, Inc., 13484 Cedar Rd. Cleveland 18, O. Sidney H. Morris & Assoc., 134 S. LaSalle St., Chicago, Ill., archts. Awarded Apr. 22.

▲ **The Austin Co.**, 16112 Euclid St., Cleveland, O., CA Est. **$7,000,000** design and construct, Case INDUSTRIAL NUCLEAR CENTER, Pettibone and Cochran Rds., GLENWILLOW, O. Case Institute of Technology, University Circle, Cleveland 6, O. CD 3/15, under O. Cleveland.

▲ **Arnold Lies Co.**, 1515 New York Ave., Aurora, Ill., CA $5,250,000. 261,000 sq. ft. East HIGH SCHOOL, 25-acre site, AURORA, ILL. Kane County School Dist. 131, 56 Jackson St., Aurora, Ill. Bids Feb. 15. CD 2/8.

▲ **Joseph J. Duffy Co.**, 4994 N. Elston Ave., Chicago, Ill., LB **$2,892,989** 2 story, brick, John Marshall, Harlan HIGH SCHOOL, 98 St. and Michigan Ave., CHICAGO, ILL. Bd. Educ., 228 N. La Salle St., Chicago, Ill. Childs & Smith, 20 N. Wacker Dr., Chicago, Ill., archts. CD 3/22.

▲ **Hope Constr. Co.**, 3520 N. Knox Ave., Chicago, Ill., CA $3,000,000. Golfview SHOPPING CENTER, Golf Rd. between Harlem and Waukegan Rd., MORTON GROVE, ILL. Coe W. Prassas Co., 111 W. Washington Blvd., Chicago, Ill. Carl M. Teutsch, 1105 W. Larence Ave., Chicago, Ill., archt. CD 1/12/55, under Arthur T. McIntosh, as owner.

▲ **Future Homes, Inc.**, Morton Scholnick, 5440 Cass St., Detroit, Mich. Owner Builds. **$4,400,000**. three 8 story APARTMENT BLDGS., on Huron River, ANN ARBOR, MICH.

WEST OF MISSISSIPPI

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

May 10 Minnesota

STREETS AND ROADS

May 10 Minnesota

▲ **Minn., St. Louis Park**—BA 5/13—City, J. Justad, clk., three section trunk sewer, Sect. (A) about 28,425 lin. ft. Sect. (B) about 24,350 lin. ft. Sect. (C) about 25,025 lin. ft. $2,000,000. Plans deposit $50. G. M. Orr Eng. Co., 1104 Currie Ave., Minneapolis, consult. engr. CD 10/30.

▲ **Mo., St. Louis**—BA 6/4—City, Frank J. McDevitt, pres. Bd. P. Service, 304 City Hall, 12 Blvd. and Market St., Zone 3, constr. new distributive pumping station at Chain of Rocks Plant, St. Louis Water Division on Mississippi River at northern edge of city, incl. installation of equip. 1 story, 97x201 ft. rein.-con. bldg., 47 ft. below ground, $3,377,500, Black & Veatch, 1500 Meadow Lake Parkway, Kansas City 14, Mo., and Horner & Shifrin, Shell Bldg., 1221 Locust St., St. Louis, Zone 3, engrs. CD 6/8/55.

BUILDINGS—BA

▲ **Colo., Pueblo**—SCHOOL—BA 5/15—School Dist. No. 60, 102 W. Orman Ave., 1 story, 164,000 sq. ft. steel, brick, Southwest High School, $1,750,000. Walter DeMordaunt, 738 Thatcher Bldg., engr. CD 4/9/56.

▲ **Minn., Albert Lea**—SCHOOL—BA 5/23—Bd. Educ., Mrs. D. W. Hellie, clk., South West Jr. High School, $2,200,000. Plans deposit $50. B. J. Hein, Albert Lea, Minn., and Hamniel & Green 19321/2 University Ave., St. Paul, archts. CD 2/17/56.

▲ **Iowa, Dubuque**—SCHOOL—Bids Asked—Catholic Parishes of City of Dubuque, 2909 Kaufman Ave., Catholic High School. $3,200,000. Durrant & Berquist, 666 Loras Blvd., archts. CD 9/12.

BUILDINGS—SLC

▲ **Colo., Denver**—DORMITORY,—etc.—University of Denver, Campus Denver, soon lets contract, dormitory and dining area, $1,500,000. Edwin A. Francis, 218 E. Speer Blvd., eng.-archt. CD 4/5.

▲ **Tex., Dallas**—OFFICE—Jacor, Inc., c/o Hedrick, Stanley & Morey, archts.-engrs., Box 5055, soon lets contract, 20 story, 50x200 ft., steel, brick, masonry office. Approx. $2,500,000.

HEAVY CONSTRUCTION—LB & CA

▲ **TEXAS**—State Hy. Comn., Austin. Bids opened Apr. 16.

Tex.—**C. H. Harrison Co.**, P.O. Box 185, Waco, Tex., LB **$892,119**, grading, structures 4.366 mi. hy. US 81, Proj. I. 75 (3) & I. 614 (13) Falls and McLennan Counties;

Tex.—**A. L. Sheppard & Ferrier Bros.**, P.O. Box 1871, Vernon, Tex., LB **$153,124**. grading, structures, base and surf. 7.088 mi. hy. FM 2361, Proj. 2253-1-1, Hall Co.;

Tex.—**Ned B. Hoffman**, 617 Fort Forth Club Bldg., Fort Worth, Tex., LB **$239,425**. seal coat 226.362 mi. hys. 283, 180, 83, 380, St. 283, 70, 92, FM 610, 880, 53, 700, and 126, Stonewall, Howard and Haskell Counties;

Tex.—**Schwope Bros.**, 6633 W. Commerce St., San Antonio, Tex., LB **$182,267**. grading, structures, base and surfacing 9.618 mi. Hy. FM 863 Proj. S. 1490 (5) Hall Co.;

Tex.—**J. Carrol Weaver Contractors**, P.O. Box 996, Sinton, Tex., LB **$93,038**. flex. base shoulders and one and two course surf. treating 11.748 mi. hy. SH 35 Proj. F 817 (2) Aransas Co.;

Tex.—**South Texas Constr. Co.**, P.O. Box 3536, Corpus Christi, Tex., LB **$115,415**. grading, structures, base and surfacing 7.709 mi. Hy. FM 496 Proj. R. 517-7-9. Zapata Co.;

Tex.—**John A. Petty, Contractor**, Rte. 3, Longview, Tex., LB **$331,576**. flex. base and hot mix ashpalt b. conc. 6.191 mi. hy. SH 149 & FM 1845, Proj. F 650 (14) Gregg Co.;

Tex.—**Dave McCullough**, Hornbeck, La., LB **$198,297**. grading, structures, base and surfacing 8.173 mi. hy. FM 1943 Proj. R. 1828-1-4, Tyler Co.;

Tex.—**McElwrath Bros.**, 918 Manor Dr., San Antonio, Tex. LB **$131,488**. flex. base shoulder structures, b. conc. pavt. and two crossings, surf. treatment 14.943 mi. Hy. H 123, Proj. C 366-2-20, Guadalupe Co.;

Tex.—**Gilvin-Terrill, Inc.**, P.O. Box 2268, Amarillo, Tex., LB **$243,484**. flex. base and hot mix b. conc. 3.701 mi. Hy. US 287, Proj. F 533 (15) and F 501 (6) Hardeman Co.;

Tex.—**Trotti & Thompson, Inc.**, P.O. Box 70, Beaumont, Tex., LB **$1,327,871**. shell concrete base and b. conc. 1.075 mi. hy. U. S. 90, Proj. I. 1091 (8) Orange Co.;

Tex.—**Austin Road Co.**, P.O. Box 1590, Dallas, Tex., LB **$2,505,722**. c. conc. pavt. flex base and surfaced shoulders 11.324 mi. Hy. US 77, Proj. I 487 (14) Ellis Co. CD 3/26.

▲† **T. C. Bateson Co.**, Box 7305, Inwood Station, Dallas, Tex., CA **$6,977,700**. 2 story, 242,368 sq. ft. steel frame physical education, Air Force Academy, (FB) 05-613-57-21, COLORADO SPRINGS, COLO. Dpt. Air Force, P. O. Box 1680, Colorado Springs, Colo. Bids Apr. 9, awarded Apr. 12. CD 4/12, under LB.

BUILDINGS—LB & CA

▲ **Sedgwick Co.**, Wichita, Kan., rejected bids Mar. 26. COURT HOUSE, WICHITA, KAN. LB **$5,598,000**. Will re-advertise. CD 4/10, under LB.

▲ **Constructor's, Inc.**, 1710 Telephone Rd., Houston, Tex. CA **$2,500,000**. CHEMICAL RECOVERY SMELTER AND PRECIPITATOR, PASADENA, TEX. Champion Paper & Fibre Co., Pasadena, Tex. CD 4/24.

▲ **Fluor Corp., Ltd.**, c/o Houston Club Bldg., Houston, Tex., CA **$4,000,000**. second unit 16,000 bbl. CATALYTIC REFORMING UNIT, SWEENY, TEX. Phillips Petroleum Co., Bartlesville, Okla.

▲ **N. G. Petry Constr. Co.**, 1114 W. 7 Ave., Denver, Colo. CA Est. Approx. $5,000,000. 14 to 21 story Brown Palace HOTEL Annex, DENVER, COLO. Boettcher Realty Co., 828 17 St., Denver, Colo. Bids Apr. 11, awarded Apr. 12. William B. Tabler, 401 7 Ave., New York 1, N. Y., engr.-archt. CD 3/27.

▲† **R. E. McKee General Contractor, Inc.**, Box 1706, Santa Fe, N. M. LB **$4,503,700**. Sigman BLDG., LOS ALAMOS, N. M. Atomic Energy Comn., Los Alamos, N. M. Bids Apr. 22. CD 3/16.

▲ **O. L. Olson Co.**, 416 Pierce St., Houston, Tex. CA **$2,225,000**. design and construct natural gas processing absorption type PLANT, LOVINGTON, N. M. Tennessee Gas Transmission Co., Commerce Bldg., Houston, Tex.

FAR WEST

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

May 15, 23 California

STREETS AND ROADS

May 15, 16, 22, 23 California

BUILDINGS—BA

▲† **Ariz., Fort Huachuca**—TECHNICAL—BA 5/21—U. S. Eng., 751 S. Figueroa St., Los Angels, Calif., constr. technical bldg., Army Electronic Proving Ground, ENG-04-353-57-89. $4,000,000. CD 8/30.

▲ **Calif., Burbank**—PLANT—BA 5/29—City, City Hall, furnishing, installing Steam Generating Unit No. 5, at Olive and Lake Sts. $1,800,000. CD 3/13.

HEAVY CONSTRUCTION—LB & CA

▲† **Carl M. Buck Co.**, 8242 W. 3 St., Los Angeles, Calif., CA **$9,434,846**, 645-unit Capehart Housing, Stead Air Force Base, INV-AF 26-603-57-6, RENO, NEV. Purch & Contg. Office, Stead Air Force Base, Nev. Bids Feb. 20, awarded Mar. 1. CD 3/1, under LB, under Commercial Buildings.

▲† **Morrison-Knudsen Co., Inc.**, 319 Broadway, Boise, Idaho, LB **$1,961,980**, est. $2,712,762 (3 bidders). Section IV of Northern Pacific Ry. relocation in Eagle Gorge Reservoir, INV 57-39, WASHINGTON. U. S. Eng., 4735 E. Marginal Way, Seattle 4, Wash. Bids Apr. 17. CD 4/10.

▲ **California Steel Products Co.**, Barrett Ave. and A St., Richmond, Calif., LB **$1,989,343**, furnishing 9 intake gates and guides for Rocky Reach Dam, Wenatchee, WASHINGTON. Chelan County Public Utility Dist., 27 N. Wenatchee Ave., Wenatchee, Wash. Bids Apr. 12. CD 3/27.

CANADA

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

May 8 Ontario — May 15 British Columbia

HEAVY CONSTRUCTION—LB & CA

▲ **NOVA SCOTIA**—Dpt. P. Wks., Hunter Bldg., Ottawa, Ont.,

Trynor Constr. Co. Ltd., 68 Argyle St., Halifax, N. S., LB **$2,238,340**. grading, culverts and base course 5 mi. Mile 10 to Mile 15, Cabot Trail, Cape Breton Highlands National Park, Ingonish. Bids Apr. 11. CD 3/27.

▲ **Fulton Banister Ltd.**, Edmonton, Alta., CA **$10,963,000**. 17 mi. 34-in. pipe west from terminus of Trans-Canada System, Burstall, Akas to Cavendish, Alta. and 100 mi. 18 in. pipe to Blindloss and Provost fields, (first section), ALBERTA and SASKATCHEWAN. Alberta Gas Trunk Line Co. Ltd., 320 9 Ave. W., Calgary, Alta. CD 7/24.

▲ **Belmont Constr. Co. Ltd.**, 716 Cambie St., Vancouver, B. C. CA **$3,214,017**. tunnels, penstock foundations and related work at Ash River hydro-electric project near Port Alberni, BRITISH COLUMBIA. B. C. Power Comn., P. O. Box 500, Victoria, B. C. Bids Mar. 28, awarded Apr. 17. CD 4/5, under LB.

(Proposal Advertisement see pp. 118 to 121)

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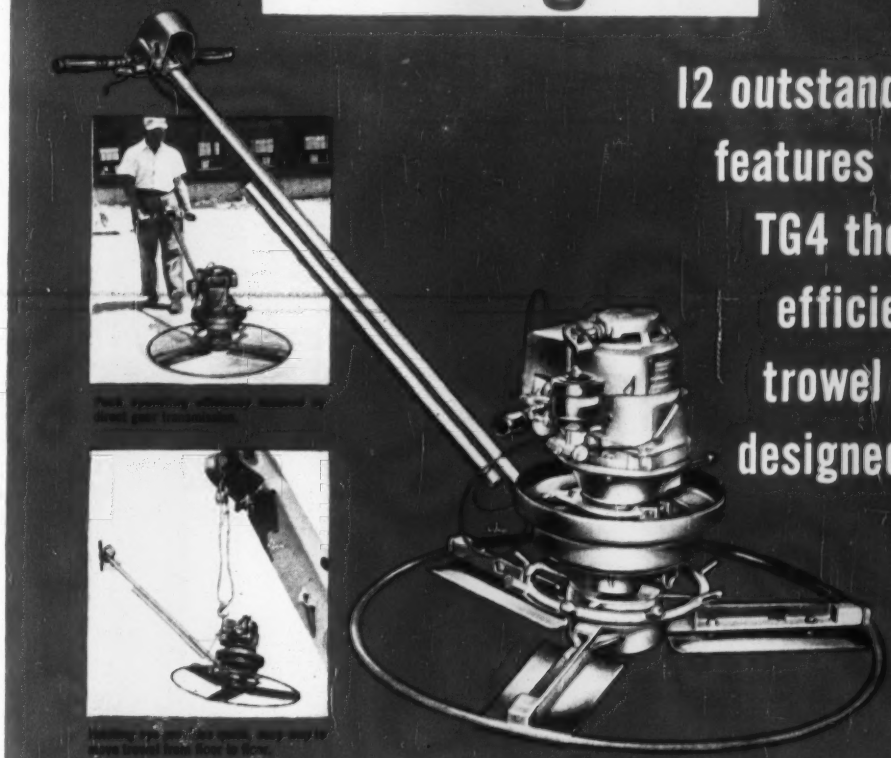

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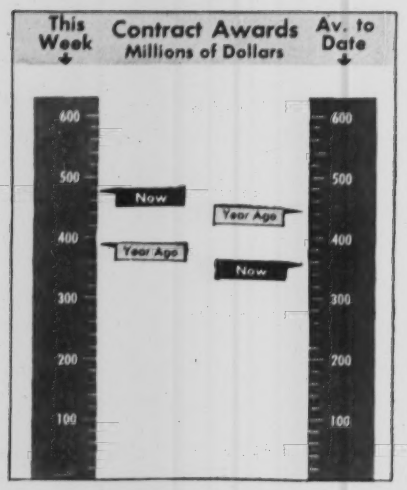
Construction Scoreboard

Activity this Week



AMOUNT OF CONTRACTS LET *

By Ownership	This Week	Cum. 18 wks 1957 millions	Chge %
Federal	$166.3	$1,061.4	+77
State and Municipal	136.2	2,389.3	+10
Total Public	302.5	3,450.7	+25
Total Private	173.5	3,052.7	−42
U. S. Total	$476.0	$6,503.4	−19
By Type of Work			
Waterworks	$3.4	$106.6	+3
Sewerage	13.9	150.1	−34
Bridges	16.2	256.1	+24
Highways	58.0	981.0	+26
Earthwork, Waterways	119.7	467.1	+113
Buildings:			
Public, Excl. Housg.	42.8	750.6	+16
Public Housing	25.3	256.2	+79
Private Housing	80.4	1,059.1	−53
Commercial	37.4	610.7	−13
Industrial	47.5	1,189.0	−41
Unclassified	31.4	656.9	−3
U. S. Total	$476.0	$6,503.4	−19

NOTE: Minimum size projects included are: Waterworks and waterways, $44,000; other public works, $73,000; industrial buildings, $93,000; other buildings, $344,000.

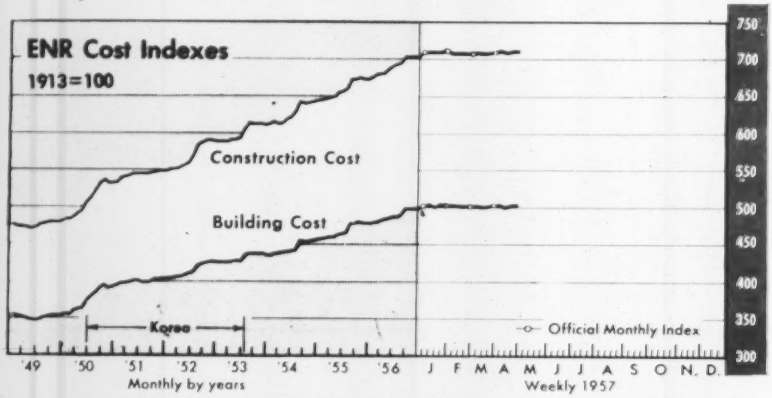
NEW CAPITAL FOR CONSTRUCTION

	Week of Apr. 25	Cum. 17 wks 1957 millions	Chge '56-'57 %
Corporate Securities	$81.6	$2,181.4	+91
State and Municipal:			
All Except Housing	126.3	1,898.3	+29
Housing	...	41.5	+104
Federal Loans	6.7	61.9	+68
Federal Aid	...	...	...
Total Nonfederal	$214.6	$4,183.0	+57
Federal Appropriations:			
In U. S.	...	...	−100
Outside U. S.	...	...	...
Total New Capital	$214.6	$4,183.0	+55

Cost Indexes as of Now

ENR INDEXES (1913 = 100), 20-cities' average	Week of April 25 1957	% Change from Mar. 28 1957	% Change from April 26 1956
Construction Cost	710.70	+0.2	+4.0
Building Cost	501.57	+0.04	+3.1

To convert above indexes to 1926 = 100: Divide Construction Cost by 2.080; Building Cost by 1.850.
1949 = 100: Divide Construction Cost by 4.770; Building Cost by 3.518.



BUILDING COSTS AND PRICE INDEXES

	1957 Jan. (J) Feb. (F) Mar. (M) April (A)	Percent Change from Oct. (O) Dec. (D) Jan. (J) Feb. (F) Mar. (M)	Year ago
Weighted Cost Indexes (1949 = 100)			
ENR Construction Cost	149 (A)	0 (M)	+3.8
ENR Building Cost	143 (A)	0 (M)	+3.1
Associated General Contractors	138 (M)	0 (F)	+4.4
American Appraisal Co.*	133 (M)	+0.2 (F)	+4.6
Weighted Price Indexes (1949 = 100)**			
E. H. Boeckh & Associates, Inc. Commercial & Factory	135 (F)	+0.2 (J)	+4.2
Smith, Hinchman & Grylls, Inc.	143 (M)	+0.3 (F)	+5.2
Contractor Price Indexes (1949 = 100)			
Austin (a)	134 (M)	+0.9 (D)	+6.7
Fruin-Colnon	133 (M)	0 (F)	+1.6
Fuller (b)	130 (J)	+1.2 (O)	+1.1
Turner	137 (J)	+2.3 (O)	+8.8

* Adjusted for estimated productivity.
** Includes overhead, profit; adjusted for estimated productivity.
a—Sept. '56 index 133 (corrected).
b—July '56 index 126 (corrected) ENR Nov. 1, '56 p. 105.

HIGHWAY BID PRICE INDEXES

	First Quarter 1957	Percent Change from Previous quarter	Year ago
Quarterly, 1949 = 100			
California Div. of Highways	145.6	+10.2	+26.5
Colorado Department of Highways	86.4	−2.4	+7.3
Idaho State Highway Dept.	95.9*	−27.2	−22.7
South Dakota St. Highway Dept	87.1	+2.3	−0.3
Texas Highway Dept	119.6	−1.6	+6.8
Washington St. Highway Comm	107.9	n.a.	+21.8
U. S. Bureau Public Roads—Composite Mile	116.4	+1.4	+7.7

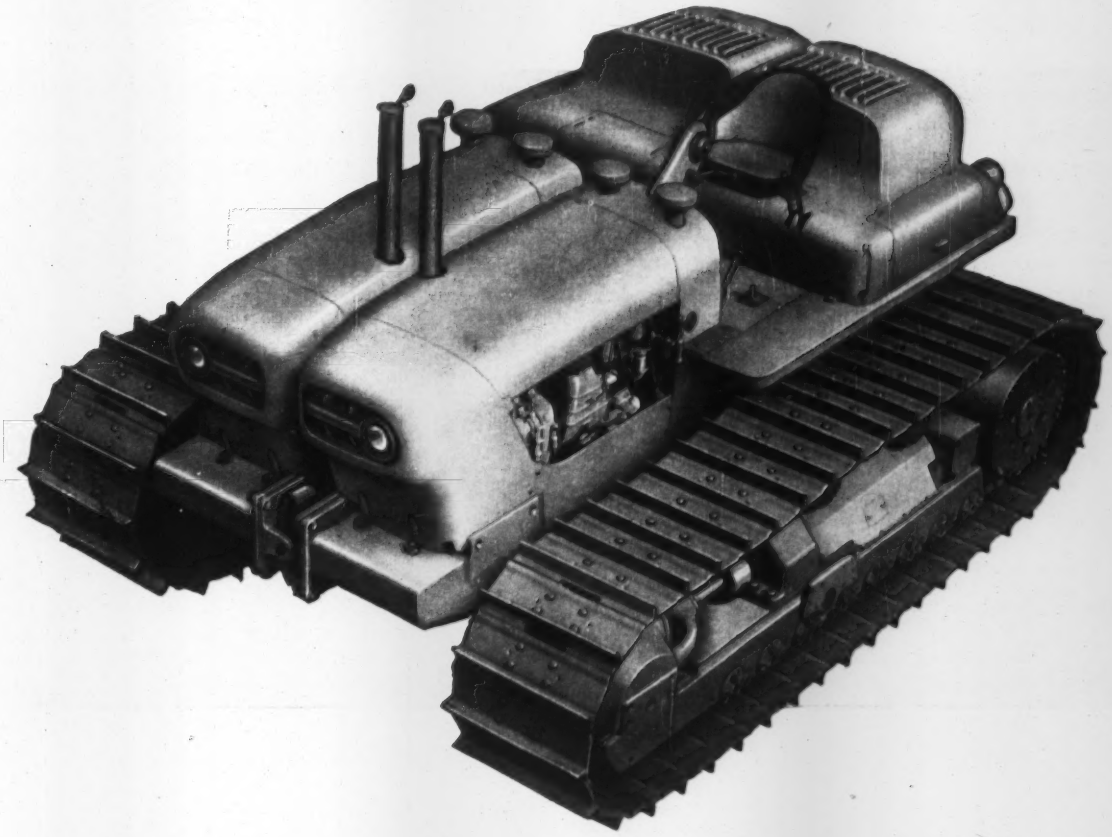
*Index shown is based on 1950 = 100 n.a.—not available.

CONSTRUCTION MACHINERY PRICE INDEXES

BLS Indexes of Manufacturer Prices, 1947-49 = 100	Mar. 1957	Percent Change from Last Month	Year ago
All Types	156.6	+0.2	+9.1
Power Cranes and Shovels	158.0	+0.5	+9.4
Tractors	168.7	0	+9.8
Scrapers and Graders	148.9	0	+7.8
Mixers and Pavers	141.9	+0.1	+6.5
Machinery, Tractor Mounted	154.3	0	+8.8
Specialized Constr. Machinery	142.5	0	+6.5
Portable Air Compressors	146.2	0	+10.8
Air Tools, Hand Held	150.0	0	+10.5

NOW THE Euclid TC-12 GIVES YOU

more horsepower... more track area... more accessibility than any other crawler!



Ever since it was introduced more than a year and a half ago, the Euclid TC-12 Tractor has set completely new standards of crawler production and performance. It has proved, on job after job, that it is years ahead of the field in ability to do more work—faster, easier and cheaper. Now the TC-12 has even more power to handle the biggest tractor jobs.

Powered by two 218 h.p. engines with separate Torqmatic Drives for each track, there's a total of 436 horsepower. Big 27" standard shoes and 8 track rollers give good balance with the additional horsepower, heavy duty dozer blades and other attachments.

This new TC-12 Crawler has many other improvements that put it even further ahead of other tractors . . . in performance, ease of operation, maneuverability and service accessibility. Ask your Euclid dealer to prove that the TC-12 has no equal for big tractor jobs and have him show you why ***Euclids are your best investment.***

EUCLID DIVISION GENERAL MOTORS CORPORATION, Cleveland 17, Ohio

Euclid Equipment

FOR MOVING EARTH, ROCK, COAL AND ORE

American Industry rests on

RAYMOND FOUNDATIONS

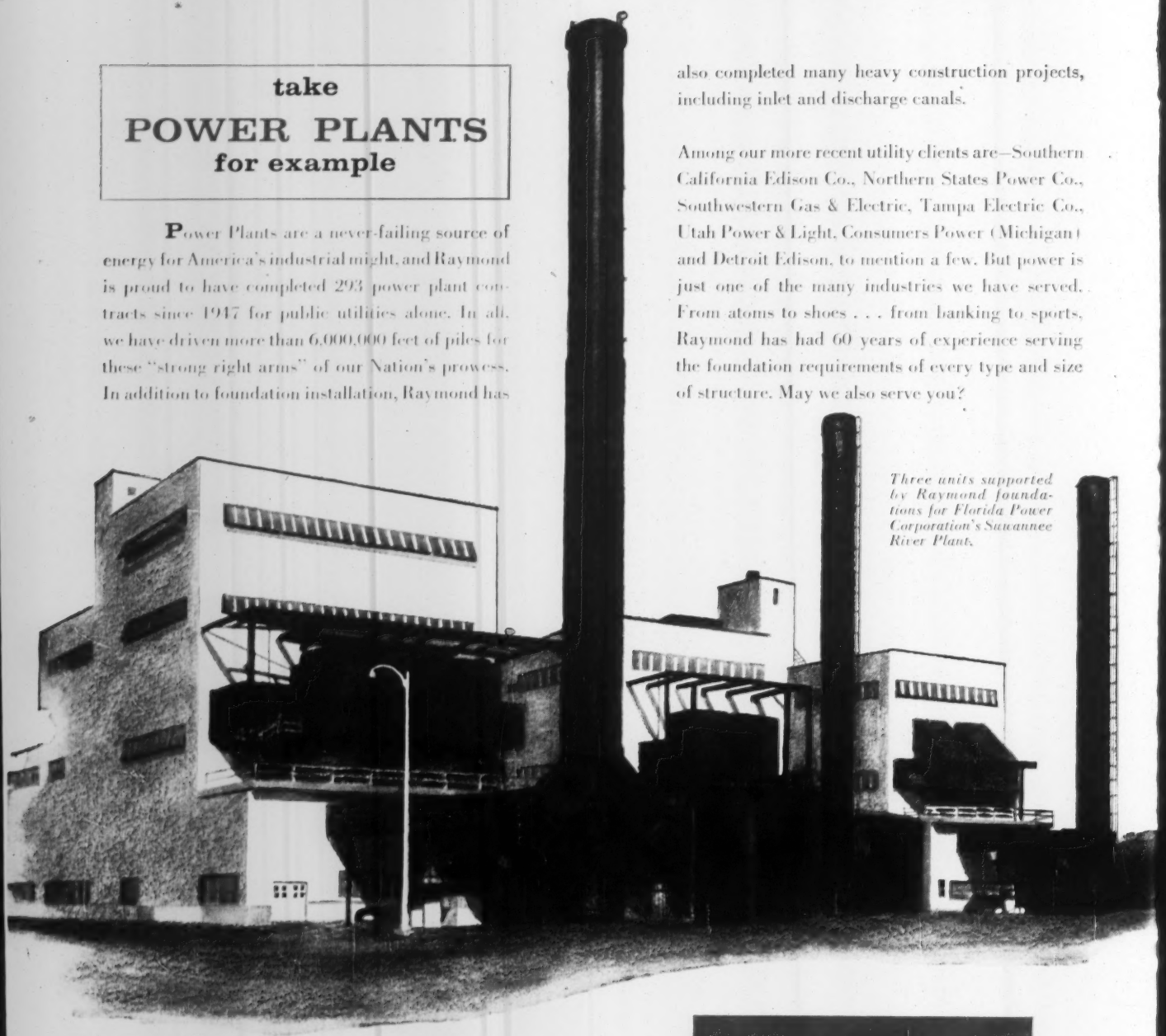
take

POWER PLANTS

for example

Power Plants are a never-failing source of energy for America's industrial might, and Raymond is proud to have completed 293 power plant contracts since 1947 for public utilities alone. In all, we have driven more than 6,000,000 feet of piles for these "strong right arms" of our Nation's prowess. In addition to foundation installation, Raymond has also completed many heavy construction projects, including inlet and discharge canals.

Among our more recent utility clients are—Southern California Edison Co., Northern States Power Co., Southwestern Gas & Electric, Tampa Electric Co., Utah Power & Light, Consumers Power (Michigan) and Detroit Edison, to mention a few. But power is just one of the many industries we have served. From atoms to shoes . . . from banking to sports, Raymond has had 60 years of experience serving the foundation requirements of every type and size of structure. May we also serve you?



Three units supported by Raymond foundations for Florida Power Corporation's Suwannee River Plant.

FOUNDATIONS FOR THE STRUCTURES OF AMERICA

COMPLETE CONSTRUCTION SERVICES ABROAD

OUR 60th YEAR

RAYMOND
CONCRETE PILE CO.
140 Cedar Street • New York 6, New York
Branch Offices in Principal Cities of the United States. Subsidiaries in Canada, Latin America, and other countries.

You are cordially invited to send for our new Highway Brochure, which gives a detailed resume of how Raymond can help you and the National Highway Program. Just write Dept. E-8, Raymond Concrete Pile Co., 140 Cedar Street, New York, 6, N. Y.

For Building Materials Suppliers—

Rising Prices Helped Boost '56 Sales

NET SALES AND PROFITS: MATERIALS AND INSTALLED EQUIPMENT SUPPLIERS

COMPANY	YEAR ENDING	SALES (in thousands)		PROFITS (in thousands)		PROFIT MARGINS (percentages)	
		1955	1956	1955	1956	1955	1956
CEMENT							
Alpha Portland	Dec. 31	31,224	35,421	4,788	6,607	15 3	18 6
General Portland	Dec. 31	40,751	45,310	8,196	9,528	20 1	21 0
Ideal	Dec. 31	72,061	77,693	13,813	14,920	19 2	19 2
Lehigh Portland	Dec. 31	71,054	75,867	10,232	10,725	14 4	14 1
Lone Star	Dec. 31	95,554	98,298	14,779	16,155	15 4	16 4
Marquette	Dec. 31	39,561	43,815	6,115	7,376	15 4	16 8
Penn-Dixie	Dec. 31	43,065	48,574	6,876	8,295	15 9	17 1
LUMBER							
Georgia Pacific	Dec. 31	91,966	121,305	6,203	7,429	6 7	6 1
Harbor Plywood	Dec. 31	16,516	15,190	1,065	465	6 4	3 1
U. S. Plywood[1]	Jan. 31	149,311	150,167	8,616	6,415	5 8	4 3
Weyerhaeuser Timber	Dec. 31	316,733	324,129	49,241	51,447	15 5	15 9
WALL BOARD ROOFING							
Celotex	Oct. 31	71,137	76,467	5,082	5,902	7 1	7 7
Certain-Teed	Dec. 31	135,433	92,081	9,030	4,896	6 7	5 3
Flintkote	Dec. 31	100,996	107,086	4,946	5,802	4 9	5 4
Johns-Manville	Dec. 31	284,741	310,390	23,511	25,003	8 3	8 0
Masonite	Aug. 31	53,984	61,395	6,093	7,177	11 3	11 7
National Gypsum	Dec. 31	148,219	151,859	15,764	14,264	10 6	9 4
Ruberoid	Dec. 31	82,134	76,360	4,511	4,292	5 5	5 6
U. S. Gypsum	Dec. 31	258,686	265,001	40,381	40,614	15 6	15 3
GLASS							
Libby-Owens Ford	Dec. 31	281,544	259,146	36,046	29,162	12 8	11 3
Pittsburgh Plate	Dec. 31	581,966	596,574	61,434	55,382	10 6	9 3
AIR CONDITIONING—HEATING							
Carrier Corp	Jan. 31	188,029	201,567	7,768	9,246	4.6	4 7
Crane	Dec. 31	331,421	375,221	9,030	10,899	2 7	2 9
Fedders-Quigan	Aug. 31	47,541	65,156	733	3,277	1 5	5 0
Minneapolis-Honeywell	Dec. 31	244,482	287,944	19,279	22,464	7 9	7 8
Murray	Aug. 31	72,917	76,230	5,678	8,392	7 8	11 0
Trane and Subs.	Dec. 31	54,062	74,444	3,453	5,740	6 4	7 7
Walworth	Dec. 31	51,609	84,309	2,354	4,476	4 6	5 3
STEEL AND OTHER METALS							
Bethlehem	Dec. 31	2,096,617	2,326,705	180,192	161,412	8 6	6 9
Inland	Dec. 31	659,706	727,152	52,466	52,999	8 0	7 3
Jones and Laughlin	Dec. 31	696,538	742,642	50,104	45,122	7 2	6 1
U. S. Steel	Dec. 31	4,097,680	4,228,877	370,099	348,099	9 0	8 2
Aluminum Company	Dec. 31	845,028	864,416	87,601	89,621	10 4	10 4
Kaiser Alum. & Chem.	May 31	268,133	330,712	28,565	43,293	10 7	13 1
Kennecott Copper	Dec. 31	548,266	566,786	125,516	142,588	22 8	25 2
Reynolds Metals	Dec. 31	384,888	405,206	34,307	41,240	8 9	10 2
MISCELLANEOUS							
American-Marietta	Nov. 30	165,340	202,311	24,110	33,705	14 6	16 7
National Lead	Dec. 31	533,729	576,292	47,890	63,152	9 0	11 0
H. K. Porter	Dec. 31	106,100	140,668	6,433	7,595	6 1	5 4

1. For 9 mo. period ending Jan. 31, 1956 and 1957.
2. For year ending Jan. 31, 1956 and 1957.

Sales continued to climb during 1956 for most building materials companies despite a leveling off in physical volume of new construction activity. But in many cases the increased sales volume is attributable to higher prices.

An easing off in demand, coupled with continued expansion of productive facilities resulted in an easy supply situation for most building materials. Steel was the exception. Cement shortages disappeared after the first quarter of 1956 although demand remained high.

The scarcity of mortgage funds, which caused a slump in home building, adversely affected materials suppliers dependent upon this market.

Wages and raw material cost increases continued to go up during the year, but with competitive pressures intensifying, many manufacturers found it difficult to make their price increases stick. Some reduced prices in the second half of the year.

Of the 40 companies surveyed, 40% reported a decline in their profit margin from the previous year, earnings performances were mixed.

However, since 1955 was a year of fat profit margins for this industry, last year's results still may be regarded as satisfactory. New construction activity in terms of constant dollars, slipped only 2% in 1956, the first year to decline in a decade.

The first quarter of this year started off at a slow pace due largely to bad weather and to the continued slump in private work contracts.

Profit margins continued to shrink, slackening demand, oversupply, and tight competition prevailed.

Plywood and lumber prices which dropped last summer, remained depressed. But, in the last few weeks, plywood orders have perked up and pulled ahead of last year. Total orders for the first 15 weeks set a new record. Backlogs of Douglas fir plywood mills are the largest since last fall.

Most materials suppliers, particularly, glass, lumber and plywood, are working off inventories. January Portland cement production was cut because of a drop in shipments and mill stocks rose to their highest level since the record high set in March 1956.

Steel and cement producers managed to pass on their rising costs in the form

...Keep the Job GOING the Way You Planned it...

With These Well-Known Leaders in the GOODALL QUALITY LINE

"NEWTYPE" SUCTION and DISCHARGE HOSE

Pumps will keep operating at top capacity . . . on schedule . . . when given the advantages of "Newtype" hose for suction and discharge. *You can't beat it* for steady, low-cost pumping performance! It cannot kink, buckle or collapse, and its outstanding strength and durability will provide length of service far beyond the "life expectancy" of ordinary hose. Light in weight and extremely flexible, for easy handling. Wire reinforced cotton cord construction; abrasion-resistant tube; tough black rubber cover with green spiral stripe for positive identification. Sizes 1¼" to 4" I.D., in maximum lengths of 50 feet.

WATER HOSE FOR EVERY SERVICE

The several brands of Goodall Water Hose have one common characteristic—they are all built to stay on the job *longer*, regardless of severe service and rough handling.

"ROADBUILDERS" was designed and built for the earliest heavy-duty road-building equipment, and still is the super-quality hose of its class—unequalled in strength, durability and economy.

"BUCKSKIN" has for many years been the Contractor's choice for a wide variety of water hose applications where the high-pressure specifications of "Roadbuilders" are not required.

"NO. 153" DISCHARGE HOSE is a reliable low-pressure hose for self-priming and other trench pump service. Its strength and stamina will "keep the job going" on a truly economical basis.

"ALL-SERV" GENERAL PURPOSE HOSE

One of Goodall's newest developments, but already well established as a reliable "handy-man" in field or shop. It is used with equal efficiency for air, water, oil, grease, gasoline, paint and insecticide spray lines. This versatility—one hose for many jobs—means definite savings in hose inventory. Flexible, all-"Synplastic"® Molded-and-Braided Construction—one, two or three braids. Tough, wear-resistant red cover. Sizes ¼" to 1½". Working pressures from 200 lbs. to 300 lbs. Maximum lengths of 500 feet.

"If it's GOODALL, it MUST be Good!"

The products briefly described here are merely selections from the complete Goodall Quality Line . . . Hose, Belting, Clothing and Footwear . . . designed for the Construction Industry. Contact our nearest branch for details or write for catalogs covering specific items.

Standard of Quality—Since 1870

HOSE • BELTING • FOOTWEAR • CLOTHING AND OTHER INDUSTRIAL RUBBER PRODUCTS

GOODALL *Rubber Company*

GENERAL OFFICES, MILLS and EXPORT DIVISION, TRENTON, N. J.

BRANCHES AND DISTRIBUTORS THROUGHOUT THE UNITED STATES. IN CANADA: GOODALL RUBBER CO. OF CANADA LTD., TORONTO.

. . . Higher prices helped material suppliers' sales

of higher prices, but other suppliers continued unable to do so. On an average, building material prices in February of this year were lower than those of last August.

Because of the year's poor start, cautious ordering by distributors was evident.

An upturn in private work now is getting under way; contracts went up sharply during the past few weeks after a deep slump. So the second quarter of this year is likely to see a substantial improvement in manufacturers' orders.

While the outlook for housing seems bleak, record breaking volumes of public work, a strong upsurge by commercial construction, and a mild comeback in industrial building, insure a somewhat rosier future.

• **Cement**—This group once again was the most profitable of the building material suppliers. Net sales and profits were up from 1955 for all major producers. Profit margins generally continued to climb.

The industry extended its postwar record to 11 years of a progressively larger volume of business as demand continued to tax capacity.

Cement shipments from domestic mills in the U.S. totaled approximately 310 million barrels last year, an increase of 6% over the previous year and a new high for the tenth successive year, according to estimates of the U.S. Bureau of Mines.

Prices were increased approximately 5% in the last quarter of 1956 and in the first quarter of 1957.

The passing of the federal aid highway act is expected to increase the volume of cement business substantially. One cement producer's study indicates that use of the material may increase 66% over the next 11 years.

• **Lumber**—Overproduction of plywood brought with it sharp declines in price and narrower profit margins for 1956.

From a January price of $88 per thousand, mill prices of Douglas fir plywood had dropped to $67 by mid-summer. In mid-February of this year, prices were still 18% below the same period a year ago.

Increases in industry capacity in excess of demand were largely to blame. The industry produced 3.9 billion feet in 1954; by 1955 production was up to 4.9 billion feet and 1956 the potential capacity was in excess of 6 billion feet although only 5.1 billion feet were actually produced.

U.S. Plywood reported a 25% decline in its earnings. And this company, which purchases two thirds of its requirements from outside sources, was not hurt as badly as some independent mills.

Weyerhaeuser Timber (which produces chiefly kiln dried lumber) and Georgia-Pacific Corp. (which has a wide range of lumber products) fared better.

• **Wall board roofing**—The decline in home building coupled with increased productive capacity acted as a major depressant upon earnings of this group of suppliers.

Companies that rely heavily on the residential construction market for sales saw their profit margins sag.

Certain-Teed Products Corporation, which witnessed a 45.7% decline in net income, blames the depressed price of asphalt roofing products.

The gypsum market completely reversed itself during 1956. For many years gypsum had been in short supply. Gypsum manufacturers carried out extensive expansion programs during recent years in an effort to boost supply up to demand. That goal was reached suddenly, in mid-year. Housing starts had dropped 16%. The sharp decline together with increased gypsum capacity paid profits.

However, firms whose product lines catered to industrial and commercial users in addition to home builders, or whose products were extensively employed for home repair and maintenance, generally managed to escape the brunt of the decline; many showed an increase in earnings.

• **Steel**—Despite the five week midsummer strike, total sales of steel producers were higher than in 1955. But earnings, were lower.

Hikes in the price of steel did not offset the substantial wage increases brought about by last year's new labor contract. This factor together with freight rate increases, and advances in scrap and other purchased commodities caused a substantial drop in profit margins of leading steel producers.

Fabricators shipped a record tonnage of 3,205,488 tons, 7% more than in 1955. But, even with the greater volume of shipments, fabricators backlogs remained large. Structural steel fabricators still had a backlog of more than 3.4 million tons at the end of February 1957 according to the AISC.

Total shipments during the first two months of this year reached a record high of 540,630 tons, up 1.1% over comparable figures of last year.

But from the middle of February onward, steel output declined. It was not until last week that a slight increase appeared.

Structural steel orders, after reaching a near record influx during the last month of 1956, tapered off at the beginning of this year.

Orders for most steel products began to run behind shipments. Demand for cold rolled sheets, hot rolled sheets and steel bars is down. But the demand for structural steel shapes and heavy plates still is strong.

• **Metals**—Sales and profits in the aluminum industry continued to climb during 1956. Kaiser Aluminum reported the highest percentage jump in earnings—a 52% increase over the previous year. But all manufacturers did well as profit margins ranged from 10.2% to 13.1%.

Supply finally caught up with demand last year largely because of the government's decision to forego the purchase of 400,000 tons of primary aluminum tentatively scheduled for the stockpile program.

The outlook for this year is an optimistic one, and aluminum companies are expansion minded. Alcoa announced a major program that will involve capital expenditures of about $600 million during the years 1956-60. Kaiser and Reynolds have major programs underway to construct new plants and expand fabricating facilities.

The building products industry remains the largest single market for the light metal. More than half of all commercial buildings under construction during 1956 utilized aluminum windows, and substantial amounts were used for aluminum roofing, siding, awnings and hardware.

Kennecott Copper once again displayed a high profit margin—last year it climbed to 25.2%. In terms of tonnage, however, sales were 7% under the year before.

• **Air conditioning-heating**—Record highs in sales and earnings were recorded by most companies in these fields during 1956.

Fedders-Quigan more than quadrupled its 1955 net earnings. And, Carrier Corporation reports that the year-end backlog of unfilled orders was up 44% at the close of fiscal 1955.

A large number of older office buildings were air conditioned last year, and the units have become a must for new buildings. The trend towards the air conditioning of factories also continued to grow.

Decline in plumbing and heating sales may appear during 1957 if the dip in new housing starts is not reversed. But on the whole, a bright picture is predicted for manufacturers in 1957.

1957 outlook uncertain, but in '56 . . .

Equipment Makers Set Sales Record

Last year's record volume of contract awards for heavy construction gave manufacturers of construction machinery and equipment their lushest business since 1951. Many firms established new sales records; earnings were up and profit margins matched or surpassed 1955.

Sales increases of 20% to 25% were fairly common; some firms did even better. Blaw-Knox, for example, reported that its 1956 sales were up 53.2% over 1955. Sales of Joy Manufacturing topped 1955 by 47.6%; American Hoist reported an increase of 43.9%.

For some manufacturers, percentage increases in earnings were even more impressive than the rise in sales. Harnischfeger, with a 22.3% sales increase, hiked its earnings by 113%. Earnings for Blaw-Knox were up 185.7% (from $2.4 million in 1955 to nearly $7 million in 1956).

Caterpillar Tractor's earnings climbed nearly 54% in 1956; Koehring's net was up 50%, and earnings of Thew Shovel jumped 63% over the preceding year.

Some of the momentum of 1956 boom carried into 1957, but not all of it. For construction machinery and equipment manufacturers as a group, first quarter 1957 results were mixed. For some companies, first quarter sales and earnings were clearly disappointing.

International Harvester was caught with excessive inventories this spring. Peter V. Moulder, International Harvester's president, reported more than a month ago that it would curtail crawler tractor production and lay off some employees in that division starting April 1 (ENR March 28, p. 109). In mid-April Mr. Moulder said the original layoffs announced would be broadened.

At the time of his original announcement, Mr. Moulder told stockholders that IH construction equipment sales up to Feb. 28 were 17% behind 1956 sales.

Allis-Chalmers, which released its first quarter results last week, reported that sales for January, February and March of this year totaled $138 million, slightly below last year's $140 million record. But, the drop in construction machinery and equipment sales isn't fully reflected in this overall figure for a well-diversified company. It is only suggested by Allis-Chalmers' comment that lower first quarter sales were attributed entirely to the slower start in construction machinery and farm equipment sales.

• **Some set records**—Not all of the first quarter news was bad. Blaw-Knox reported that first quarter sales totaled nearly $46.5 million, up 24% from the comparable 1956 period and earnings set a new record of better than $2 million.

New orders received by Blaw-Knox in the first quarter came in at a steady pace, according to W. Cordes Snyder, Jr., president, and the backlog of unfilled orders totaled $155 million at the end of March. However, a large part of this backlog represents orders from the steel industry.

Mack Trucks reported sales of $68.2 million in the first quarter, well above the $60.2 million for the comparable 1956 period; net income of $2 million set a new first quarter record.

Caterpillar Tractor and Thew Shovel also came in with favorable first quarter reports. Caterpillar's first quarter 1957 sales rose to $186.7 million, because of a high level of national business and increased manufacturing capacity at its plants in Decatur and Peoria, Ill.

The $186.7 million in first quarter sales compared with $162.8 million for the same quarter in 1956. Some of the higher sales went into dealers' inventories "to meet the usual heavy seasonal demand," Caterpillar reported.

Thew Shovel's $12 million sales volume for the first quarter was up about 1% over the first quarter of 1956, according to C. B. Smythe, president. Earnings in the first quarter did not keep pace however, because of higher materials and wage costs.

To offset some of these rising costs and improve the earnings picture, Thew Shovel is raising prices on its line in the second quarter. Price increases will average about 4%, according to Mr. Smythe.

• **Slow start**—Even some of the companies that did better in the first quarter of 1957 than a year ago, have been pounding away on a noteworthy theme: Bad weather and some delays in the highway program have given construction machinery and equipment sales a slow start in 1957—slow, at least, in relation to some of the more optimistic forecasts that were made late last year by manufacturers.

The pickup probably will come in the second quarter, according to Caterpillar officials. Their comment:

"Although earthmoving projects have

(Continued on page 113)

NET SALES AND PROFITS IN EARTHMOVING EQUIPMENT

COMPANY	YEAR ENDING	SALES (in thousands)		PROFITS (in thousands)		PROFIT MARGINS (percentages)	
		1955	1956	1955	1956	1955	1956
Allis-Chalmers	Dec. 31	535,069	547,439	24,805	20,355	4.6	3.7
American Hoist	Nov. 30	21,376	30,759	1,075	1,287	5.0	4.2
Blaw Knox	Dec. 31	109,161	167,009	2,444	6,966	2.2	4.2
Bucyrus-Erie	Dec. 31	73,005	87,771	6,517	6,798	8.9	7.7
Caterpillar Tractor	Dec. 31	533,038	685,940	35,953	55,404	6.7	8.1
Chain Belt	Oct. 31	45,204	56,773	3,465	4,673	7.7	8.2
Clark Equipment	Dec. 31	131,252	145,385	9,536	9,101	7.3	6.5
Gardner Denver	Dec. 31	47,658	64,062	4,873	7,357	10.2	11.5
Harnischfeger	Oct. 31	66,253	81,147	1,529	3,257	2.3	4.0
International Harvester	Oct. 31	1,165,785	1,252,079	55,501	49,619	4.8	4.0
Jaeger Machine	June 30	12,591	16,488	872	1,414	7.0	8.6
Joy Manufacturing	Sept. 30	81,912	121,131	5,683	10,913	7.0	9.0
Koehring	Nov. 30	40,887	52,383	1,699	2,549	4.2	4.8
Link-Belt	Dec. 31	129,453	163,922	7,603	11,072	5.9	6.8
Oliver Corporation	Oct. 31	133,600	107,857	4,796	1,921	3.6	1.8
Thew Shovel	Dec. 31	34,748	46,308	1,130	1,838	3.3	4.0
Westinghouse Air Brake	Dec. 31	172,502	214,653	8,382	11,924	4.9	5.6

6 1/2 CUBIC YARD MIX
NATIONAL READY MIXED CONCRETE ASSOCIATION
AND CERTIFIED
MIXER MANUFACTURERS BUREA
WITH ITS STANDARDS FOR TRUC
AGITATORS AS APPROVED BY T
9 CUBIC YARD AGIT
UNLESS RATED LOWER
MANUFACTURER'S DATA
N. R. M. C. A. REGISTRY NO
NATIONAL READY MIXED CONCRETE ASSOCIATION
7 CUBIC YARD MIXER
MAXIMUM CAPACITY
CERTIFIED BY THE TRUCK MIXER MANUFACTURERS BUREAU TO COMPLY WITH ITS STANDARDS FOR TRUCK MIXERS AND AGITATORS AS APPROVED BY THE N.R.M.C.A.
9 1/4 CUBIC YARD AGITATOR
UNLESS RATED LOWER ON THE MANUFACTURER'S DATA PLATE
N.R.M.C.A. REGISTRY NO

Old Rating Plate

Corresponding New Rating Plate

Effective now . . . new standards and rating plates for truck mixers, agitators

MAXIMUM CAPACITIES IN CUBIC YARDS OF MIXED CONCRETE

TRUCK MIXER	3½	4	5	5½	6	6½	7	8	8½	9*
AGITATOR†	4½	5¼	6½	7¼	7¾	8½	9¼	10½	11¼	12

* Truck mixer sizes larger than 9 cu. yds., in increments of 1 cu. yd. only, are standard when conforming to all Bureau requirements.

† Unless a lower agitator capacity is shown on manufacturer's data plate.

The above capacity standards of the Truck Mixer Manufacturers Bureau, approved by the National Ready Mixed Concrete Association, became effective on May 1.

Note that they simplify truck mixer standards by eliminating the former dual system of "rated" and "guaranteed" capacities. Only one rating, for "maximum" capacity, is now given. This corresponds exactly to the former "guaranteed" capacity rating. Its drum volume requirements have, therefore, been used, proved and officially accepted for nearly four years (since September, 1953).

Three New Sizes

New 5½, 6½ and 8½ cubic yard ratings, based on the same drum volume ratio as the other sizes, have been provided. A complete choice of standard sizes is now available to match today's truck capacities, highway weight laws and the operating needs of every user.

More exacting standards have also been established for mixing time and water systems. In addition to accuracy of measurement within 1% of tank capacity when standing level, it is now required that measuring tank and pump be capable of delivering not less than 45 gallons per minute *into the mixer drum.*

New Plates, Printed Standards Offered

Owners of truck mixers now carrying Bureau rating plates of 3 - 3½ or larger size may replace them with new plates, which will be supplied without cost on application to the Bureau.

Copies of the new standards are offered to architects and engineers who maintain these high quality standards by writing them into their own ready mixed concrete specifications.

Address requests to TRUCK MIXER MANUFACTURERS BUREAU, Munsey Building, Washington 4, D. C.

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Mattoon, Ill.
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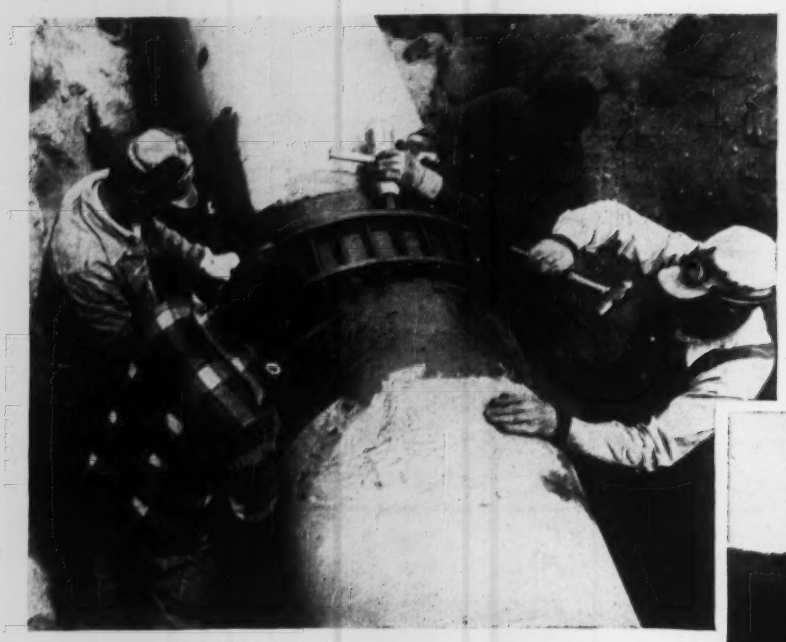
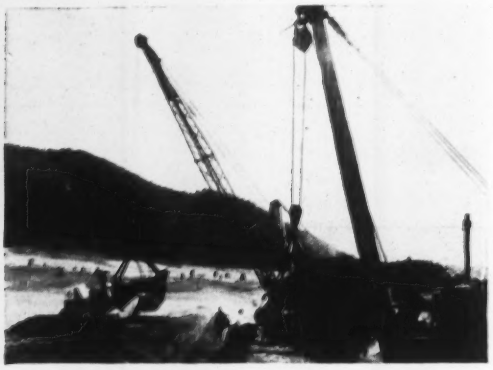


DELIVERING WATER CHEAPER

Four-man crew using power wrenches assembles this Dresser Coupling in minutes. Dresser Couplings tested bottle-tight on line pressures up to 800 psi.



Cranes lowered the long sections of steel pipe into the trench as fast as the assembly crew could position and couple them.

54 Miles of 30" Dresser-Coupled Steel Pipe Installed in 68 Days at Colorado Springs!

Water supply problems are nothing new to Colorado Springs. Back in 1921, the city constructed a steel pipe line to collect runoff from the south slope of Pikes Peak. That line has been giving dependable, trouble-free service ever since, so it was experience plus good engineering judgment that led to the choice of steel pipe with Dresser Couplings for the city's latest 54-mile addition to its water supply system.

Colorado Springs profited from experience with this 20" pipeline laid 33 years ago. Flexibility of Dresser Couplings make it possible to lay long radius curves using straight lengths of pipe.

The high beam strength of steel pipe plus the adaptability of Dresser Couplings makes them the ideal combination for irregular terrain.

The new 30" line runs from Montgomery Dam to Lake George — over some very rugged terrain — to deliver 18 mgd to Colorado Springs and to help supply the new U.S. Air Force Academy nearby.

Here's how Dresser Couplings helped make it possible to install this 54-mile line in 68 working days: A four-man crew, using power wrenches, assembled the Dresser Couplings on the pipe . . . some in as little as two minutes. Next, a two-man crew pulled the coupling bolts up to proper torque. The line was laid *at the average rate of about 4,200 ft. per day.*

For a bottle-tight, trouble-free line that *delivers water cheaper*, it pays to specify steel pipe with Dresser Couplings. Dresser Manufacturing Division, Bradford, Pennsylvania.

ONE OF THE DRESSER INDUSTRIES

. . . Equipment makers set sales record

been delayed more this year than in previous years, the company anticipates that dealers will experience a heavy demand during the second quarter."

Officials also noted a "public tendency to overemphasize the impact of the Federal Highway Act of 1956 on total roadbuilding construction this year."

The officials added that "best estimates of 1957 spending for highway construction are that it will amount to about $5.4 billion, or approximately $500 million more than in 1956. Beyond 1957, expenditures are expected to increase gradually—in 1958 to about 10% above 1957, and to possibly $10 billion by 1970."

• **Progress and prosperity**—While some construction machinery and equipment manufacturers appear slightly puzzled about the outlook for the rest of this year, they can look backward with some assurance to 1956 which marked for the industry a year of high sales, improved profit margins and numerous product improvements.

Here briefly is how some representative firms in the construction machinery and equipment field fared in 1956 and how they expect to do this year:

Allis-Chalmers—Sales for the company as a whole totaled $547 million in 1956. Of the total, A-C reported that its construction machinery, Buda and farm equipment divisions accounted for 55% of sales. Earnings were $20.4 million, down $4.5 million from 1955. Reason cited by Allis-Chalmers: ". . . the steady increase in labor and material costs." Selective price increases are expected to offset these higher costs in 1957.

American Hoist & Derrick—Fiscal '56 sales and profits both were substantially higher than in 1955. The company negotiated long-term financing last year to bolster its working capital and provide for additional facilities. With a good market and financing assured, American Hoist is optimistic about 1957.

Blaw-Knox—Records both in sales and earnings marked Blaw-Knox's golden anniversary last year. Sales were up 53% over 1955; net income was up 66%. But, sales to the steel and nonferrous metals industries took most of the credit for the firm's success pattern last year. Blaw-Knox commented that "the process equipment and engineering-construction units did not achieve satisfactory results last year. Improved performance in 1957 is indicated for both."

Expanding on this, Blaw-Knox said: "The new road machinery plant operated through much of last year under the difficulties common to the start-up of new facilities. This operation may now be expected to improve materially . . . expansion in operations will develop as the highway program matures. As currently viewed, however, the national road program is not progressing as rapidly as had been anticipated earlier."

Bucyrus-Erie—One record after another tumbled last year for Bucyrus-Erie. For the firm, 1956 was the best year in its 76 year history. Shipments billed, net earnings, business booked and dividends paid all set new records last year.

Shipments totaled $86.6 million, up 20.7%. Net earnings were $6.8 million, as against $6.3 million in 1955. And, at the end of the year, the backlog of unfilled orders for machines amounted to $28.3 million as against only $16.7 million when the year started. Earnings were up more than 8% above the 1955 figure.

Assuming another high level of construction this year, Bucyrus-Erie officials see "another record year in 1957 . . . as a reasonable prospect."

To meet this expected sales increase in 1957 and in later years, Bucyrus-Erie, like many other construction machinery manufacturers, has been pouring money into plant expansion and modernization. At its two Erie, Pa., plants, expansion programs recently completed have nearly doubled the output of the Erie steel foundry and substantially increased capacity for manufacturing small excavators. Other expansion moves are under way.

Caterpillar Tractor—Sales of $685.9 million and net profits of $55.4 million both were the highest in the company's history. A new record is predicted for 1957. Caterpillar will spend about $200 million for additional facilities through the three years ending in 1959 "to keep pace with the demand for more products."

This expansion program will include a research center near Peoria, Ill., comprising an administration building, labs for development of power plants and vehicle components, a materials research laboratory, applied mechanics lab and necessary service facilities.

Additional manufacturing facilities for Caterpillar, under way or planned, included a plant at Aurora, Ill., for production of two smaller crawler tractor and tractor shovel models, additions to the Joliet and Decatur, Ill., plants and a new industrial engine plant near Peoria. (Two new parts sales warehouses are under construction in Denver, Colo., and Morton, Ill.)

Chain-Belt—New records were posted by Chain-Belt both for sales and net profits. Sales in '56 totaled nearly $57 million; net profits, $4.7 million. Sales were up 26% over 1955. After-tax profits were 35% higher than in 1955. Counting on the future, Chain-Belt expanded its facilities for all divisions.

Harnischfeger—The previous sales record set in 1953 went by the boards and 1955 was a pale shadow of last year's Harnischfeger performance. Net sales of $81.1 million topped the 1953 record by 18.9% and climbed 22.5% ahead of 1955. Net earnings of $3.2 million were more than double the 1955 figure.

International Harvester—For the fiscal year ended Oct. 31, 1956, the company reported $208.2 million in sales of construction equipment and service parts as against $147.7 million for the preceding year. The company remains optimistic about 1957 for its construction line. But the gross sales of the company, which totaled $1.2 billion in 1956, may be hurt by the continued sales weakness in the farm equipment field.

Koehring—Mergers, including one with the Buffalo-Springfield Roller Co., and a working agreement to manufacture certain ditching machines produced by Crutcher-Rolfs-Cummings for pipeline work, helped Koehring boost its sales 28.1% and its earnings 50% last year.

Oliver—Sales were down 19.4% and earnings were 60% lower because of production cut-backs and rising costs. Caught with heavy inventories of farm equipment (of which it is a major producer), Oliver watched its overall sales and earnings figures fall throughout the year. But, sales of its nonfarm products, used principally in the industrial, construction and roadbuilding fields, jumped 24%, totaling $19.5 million last year.

Thew Shovel—Net sales for 1956 rose 33⅓% over 1955 to produce the second highest volume in the firm's history. Earnings were up 62.7%. Outlook for 1957: bright.

Westinghouse Air Brake—To keep up with the demand for construction machinery and equipment, LeTourneau-Westinghouse, the firm's construction industry supply arm, is in the midst of a $9 million expansion.

This ENR analysis could not, for space reasons, report on every manufacturer of construction machinery and equipment. But from the representative firms covered, one thing seems clear: 1956 was a record-breaker for many companies, a near record-breaker for most of the others. And, 1957 should be another good year.

Long-Term Labor Contracts Increasing

Labor contracts that will run for longer than two years appear to be occurring with greater frequency this year as contractors and construction workers continue their 1957 collective bargaining. Three–and even five year contracts–are no longer the milestones of the past.

But in this respect, as in other bargaining areas such as size of wage boosts, number of installments and types of fringe benefits, the local nature of the construction industry is being reflected again in the traditional absence of a collective bargaining pattern.

Although this makes generalizations perhaps misleading, here are a few based on recent settlements in the building trades:

• **Wage increases**—Hourly wage increases, whether present or deferred, have been running from zero to 30 cents. Favorite figures are 10 and 12½ cents.

A number or contracts, including those for one year, call for paying annual increases in two installments–but again no pattern emerges. Plumbers in Colorado Springs, for instance, get 18 cents now and 5 cents in October, but laborers in Tampa, Fla., receive 5 cents now and 7½ cents in October.

Where second year deferred increases occur, the present boost is generally larger than the deferred increase. As an example, carpenters in Topeka, Kans., settled for 10 cents now and 7½ cents next year.

• **Contract duration**—For contracts longer than one year, the two year duration still has the widest acceptance.

But three years contracts have been reported for laborers in Tampa and for floor layers, teamsters and operating engineers in Kansas City, Mo. In each case, the deferred increases are predetermined.

Five year contracts have appeared in northern California, Philadelphia, and Wilmington with laborers and cement finishers. In two cases, deferred increases are predetermined (10 cents each year in one, and 18 cents in the other) but in the remaining two contracts wages are left open for the third and subsequent years.

• **Fringe benefits**—Interest in fringe benefits is generally limited to the traditional types, with emphasis on their improvement.

Health and welfare, holidays, pensions, vacations and travel pay are rating the most universal attention.

In isolated instances, there has been some emphasis on coffee breaks and a seven hour day (carpenters in Philadelphia) and on double time for all overtime (carpenters in Miami, Fla.). Interest in promotion funds has been spotty–Tampa plasterers just won a 3 cent contribution to finance trade promotion. And yet, in some cases, as in Topeka, the trades are settling without fringe benefits.

• **Tough spots**—Area bargaining is undergoing no noticeable extension and the whipsawing of various contractor groups continues in several areas. For the most part, settlements are being amicably reached and there is an ab-

(Continued on page 116)

A Glance at Some Recent Settlements

Colorado Springs—Ending a 15 day strike, **plumbers** and **steamfitters** settle for 23 **cents** an hour–18 now and 5 in October–under a **1 year contract,** making the current wage scale $3.35, the same as Denver. A clause assuring wage equality with Denver workers is dropped.

•

Wilmington—Allied Construction Industries of Delaware and **cement finishers** (Local 36) signs a **5 year contract** granting a **50 cent** hourly wage hike payable in annual installments of 10 cents each. Present scale becomes $3.25. It's the second 5 year settlement for the industry within the state–laborers (Locals 199 and 847) earlier signed for the same period with a reopener on wages and health and welfare.

•

Miami, Fla.—To catch up with other trades, **roofers** settle with their own contractors for a **2 year contract** that grants a **63 cent** wage boost–25 cents now and the balance in three installments–making the present scale $2.87 plus 9 cents an hour in health and welfare. In **Tampa,** AGC chapter settles with three trades: **laborers** win **32½ cents** (5, 7½, 10 and 10) under a **3 year contract** that pushes the current scale to $1.30; **bricklayers** and **plasterers** get **40 cents** (10, 10, 10 and 10) in a **2 year contract** (new scales are $3.00 and $3.10 respectively).

•

Topeka—Eleven trades–bricklayers, carpenters, cement finishers, glaziers, laborers, lathers, marble setters, operating engineers, plasterers, teamsters and tile layers–sign **2 year contracts** for hourly increases ranging up to **25 cents,** payable in two installments. Majority call for 12½ cents each year.

•

New Orleans—Mechanical Contractors Association settles with **plumbers** and **steamfitters** (Local 60) for **35 cents** (10, 10 and 15) under **2 year contract** continuing 15 cent health and welfare contribution and putting current scale at $3.15.

•

Kansas City, Mo.—Builders association and **floor layers** agree to a **3 year contract** (covering five counties in two states) calling for a **30 cent** hourly increase payable in three installments (12, 8 and 10), plus another 50 cents a day in fringe benefits that represent an increased car allowance, vacation and holiday pay. **Laborers** signed earlier for **30 cents** (10 cents each year) under a **3 year contract.**

•

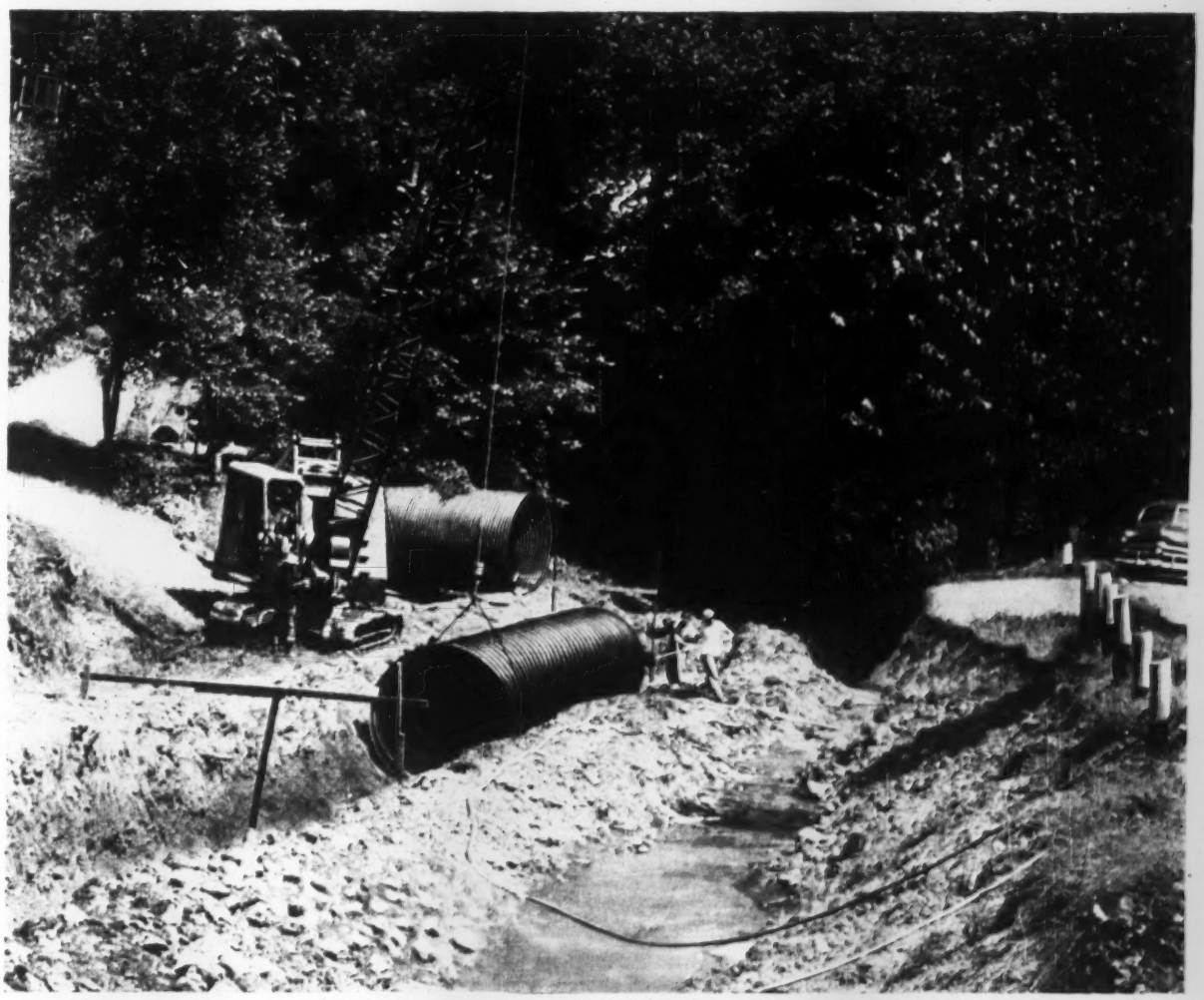
New Jersey—A strike by **bricklayers** in Perth Amboy and South River ends in a **1 year** contract granting a **30 cent** hourly wage boost. New scale is $4.10. Contract, also covers New Brunswick; keeps the 10 cent health and welfare contribution.

•

Columbus, Ohio—Calling off a proposed strike against Painting and Decorating Contractors of America, **painters** (Local 1275) accept **19 cents** under a **1 year contract.** New scales: brush work, $2.90; spray work, $3.20; structural steel, $3.07½; hazardous work, $3.45.

•

Philadelphia—For the first time, **laborers** sign a **5 year contract** granting an **immediate wage boost of 15 cents,** with another 10 cents next year; contract will be reopened for wages only in the third year; new rate is $2.25. **Tile setters** agree to **12½ cents** under a **1 year contract** that boosts their wage scale to $3.50.



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scence of strike fever even in the tougher spots.

Nine crafts, for example, were working without contracts under a tenuous truce last week in five counties of two states in and around Kansas City, Mo., as negotiations continued with the Builders Association, which represents 600 general contractors, subcontractors and material suppliers. In the background is a previous settlement with two crafts for a 30 cent boost spread over three years, and a 32 cent, three year settlement between the Heavy Constructors Association and three of the crafts.

More indicative of the results of contractor disunity was the situation in Miami, where the roofers jumped the gun with their own contractors and won a 63 cent wage boost in a two year contract while the Home Builders and Associated General Contractors were still negotiating with the carpenters who were expected to set the pace for other trades.

And in Philadelphia, where more than a dozen wage pacts are expiring and where the carpenters reportedly hold the key to other settlements, negotiations between the carpenters and the General Building Contractors Association went into mediation as the carpenters informed the Home Builders, who negotiate with the trades independently of GBCA, that current commercial rates would have to be carried over to the new homebuilding contract.

On the West Coast, broader bargaining has been advanced by the teamsters who have presented the Northern and Central Chapters of the AGC with demands for a 25 cent hourly wage increase for most classifications, plus 10 cents for each of three new fringe benefit funds; holiday, vacation and pension.

The union has suggested a statewide pact which would include the AGC's Southern Chapter. Meanwhile, the Northern and Central Chapters, which have had a 40½ to 57½ cent demand from the carpenters, have heard from the cement finishers—they want 25½ cents in wages and 22½ cents in fringe benefits covering pensions, vacations and higher health and welfare payments. And Local 3 of the operating engineers is including a demand for a supplementary unemployment benefit fund or, as an alternative, a pension fund to cost employers 10 cents an hour. Settlement, however, has been reached with the Northern California District Council of Laborers on the basis of 90 cents over a period of five years.

Jobs in Dispute

Moving sidewalks cause a jurisdictional dispute

Construction work on the new $7.5 million air terminal at Love Field in Dallas was slowed down recently by a jurisdictional dispute over installation of moving sidewalks. At the same time, work was resumed on Ice Harbor Dam near Pasco, Wash., following a dispute between carpenters and iron workers over rigging and signaling equipment. And in Rochester, N. Y., the National Labor Relations Board turned to a federal court for an injunction in a carpenter-bricklayer quarrel that stemmed from the use of concrete slabs.

According to a spokesman for T. C. Bateson Co., general contractor on the Love Field terminal, the sidewalk dispute in Dallas arose when the installation work was assigned to millwrights and iron workers. A protest was registered by the elevator constructors, who claimed the work. They won the support of the Dallas Building Trades Council, which called a sympathy strike. All the trades but three—carpenters, lathers and iron workers—left the job. The Dallas County Construction Employers Association is seeking mediation of the dispute.

On the Ice Harbor Dam project, both the carpenters and iron workers claimed jurisdiction over installation of rigging and signaling equipment. The dispute resulted in a jurisdictional strike in which 17 carpenters engaged. Work was resumed after agreement was reached to place the matter before a committee representing the unions and Montag, Halvorson, Austin & Associates, the contractor.

The Rochester dispute stemmed from the assignment of concrete slab work on a church project to carpenters. Members of the bricklayers' Local 11 protested and struck. Secondary boycott charges were filed with the NLRB. Although the bricklayers have returned to work, the NLRB will continue injunction proceedings to prevent another stoppage.

Union Fund Legislation An Administration Goal

Following a conference with President Eisenhower last Thursday at Augusta, Ga., Secretary of Labor James P. Mitchell reported that the Administration will again press Congress for federal legislation to protect the integrity of union welfare and pension funds and to allow public disclosure of union financial statements that have been filed under the Taft-Hartley Act.

The conference, which stemmed from the current Senate investigation of labor and management, was called by the President to discuss "what actions may be required . . . to protect the interests of the individual working man."

Both the President and Secretary Mitchell made it clear that corruption on the part of a few "should not obscure the fact that the vast majority of those connected with organized labor are decent and honest Americans."

Mr. Mitchell cautioned against hysterical enactment of "punitive legislation aimed at undermining or weakening the general body of organized labor." And the President stated that the labor movement "must be free to pursue efforts to achieve social and economic gains which in the past have benefited the nation as a whole."

The Administration proposal was welcomed by AFL-CIO President George Meany, who observed that the federation has "long favored legislation even more sweeping" than any yet proposed for the protection of union funds.

Secondary Boycotts

ICC ruling hits use of boycott clauses in teamster-trucker agreements

A showdown on the use of hot cargo clauses drew a little nearer last month when an Interstate Commerce Commission examiner ruled that common carrier permits should not be issued to companies honoring hot cargo clauses in labor contracts with the teamsters union.

The ruling was issued after a hearing on a complaint filed with the ICC by Galveston Truck Line Corp., a nonunion carrier that couldn't get shipments transferred to other lines having labor contracts containing hot cargo provisions. Under these clauses, familiar in the construction industry, a union reserves the right to refuse to handle "unfair" goods produced or shipped by a nonunion company or one with which the union has a dispute.

The Galveston ruling becomes final unless appealed to the ICC within 20 days. It does not pass on the legality of hot cargo clauses—only on the right of a common carrier to abide by them.

The ICC examiner took the view that a public carrier, by its very nature, has no right to "bargain away its obligation and duties to the public".

Management's obligation to the pub-

(Continued on page 118)

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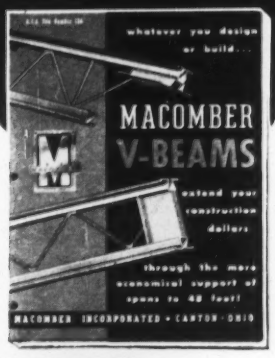
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ig also has been raised to nullify hot cargo clauses in the construction industry on the theory that an employer cannot, by signing or giving play to a hot cargo clause, deprive the public of its protection against secondary boycotts afforded by the Taft-Hartley Act. A ruling to this effect was issued last year by the U.S. District Court in Massachusetts, when confronted by a clause in a carpenter contract that stated that "employees shall not work or install any form of lumber pre-cut by nonunion carpenters".

No final decision, however, has yet been handed down on the validity of these provisions. The National Relations Board regards the clauses as not invalid in themselves but holds that union efforts to enforce them are unlawful when pressure is exerted on employees rather than employers. And it also holds that the contractual existence of a hot cargo clause is no justification for secondary boycott action nor an effective defense to such a charge.

Arbitration of Disputes Hits a Legal Roadblock

Use of arbitration clauses in labor contracts was struck a heavy blow—at least in Mississippi—last month, when the Mississippi Supreme Court ruled that collective bargaining agreements for arbitration of future disputes between labor and management are not enforceable in the state.

The ruling set aside a lower court injunction calling for arbitration of a seniority dispute at the Machine Products Co. plant in Prairie, Miss.

In the absence of statutory law for enforcement of arbitration agreements, the court rested its decision on the common law. "It is settled at common law," the court stated, "that a general agreement, in or collateral to a contract, to submit to final determination by arbitration the rights and liabilities of the parties with respect to any and all disputes that may hereafter arise under the contract is revoidable at will by either party at any time before a valid award is made and will not be enforced by the courts."

Labor Seeks High Ruling On Right-to-Work Issue

The question of whether state courts have authority to act in labor disputes in which firms engaged in interstate commerce are involved is again before the U.S. Supreme Court. This time the problem relates to the right of the Tennessee courts to enforce the state's right-to-work law.

If the answer is "no", right-to-work laws would be rendered rather impotent because state courts could no longer enjoin picketing against nonunion firms engaged in interstate commerce.

The Supreme Court appeal has been filed by the Nashville Building and Construction Trades Council and Local 429 of the International Brotherhood of Electrical Workers. Genesis of the case was the union's picketing of Farnsworth & Chambers Co., Inc. when the company refused to hire union members on a job at Tennessee Valley Authority's Gallatin steam plant. Farnsworth applied to a lower state court for relief under the right-to-work law and obtained an injunction against the picketing.

Later, the State Supreme Court sustained the injunction and ruled that the passage of the federal Taft-Hartley Act does not "so exclusively preempt" the field of labor-management relations as to deny state courts the right to enforce a right-to-work law even where the dispute is in interstate commerce. That decision has been appealed.

Nearly a month ago, the U.S. Supreme Court, in disposing of a San Diego Building Trades Council case, ruled that state courts can't enter labor disputes arising under federal law when the parties are engaged in interstate commerce even if the National Labor Relations Board has declined to take jurisdiction.

Union Is Ranked Low In Worker Loyalties

How strong is a worker's loyalty to his union? Some say of all his loyalties it ranks only fifth. And this may become a critical factor in the pending conflict between the AFL-CIO and the teamsters union.

Employers who last month attended a seminar sponsored by the Associated Industries of Kentucky were told that the average worker's first loyalty is to his family. In the order of their importance, the worker's next loyalties are as a citizen, a consumer and an employee. These were the views of labor relations consultant William Gutwein, who spoke at the Louisville seminar.

Speaking of labor-management relations generally, Mr. Gutwein said employers should seek to promote the seven basic needs of workers—job security; good working conditions; an opportunity to get ahead, to be heard and to be recognized; and the need to be respected and to "belong". As a guide for management action, he offered a five-point formula: Be friendly, frank and fair; show faith; and "if these don't work" be firm.

OFFICIAL PROPOSALS

Bids: May 16, 1957

Mackinac Bridge Authority

Advertisement for Proposals
for the
Lighting and Electrical Work
of the
Mackinac Bridge

The Mackinac Bridge Authority will receive sealed proposals for the construction of Contract No. 19, Lighting and Electrical Work, for the Mackinac Bridge until 2:00 P.M., Eastern Standard Time on the 16th day of May, 1957, at the office of the Authority, Mackinac Bridge, St. Ignace, Michigan, at which time and place proposals will be publicly opened and read aloud.

The work includes the construction of the following:

1. Construction of two (2) transformer houses complete with equipment, and equipment for four (4) substations on bridge structure to be placed on platforms provided by others.

2. A three-phase, 4-wire, 2400/1160-volt, 60 cycles multiple electrical distribution system for the high voltage series mercury vapor bridge lighting system. Total length of bridge, causeway and toll plaza is approximately 23,000 linear feet.

3. A low voltage, three-phase, 4-wire, 120/208-volt distribution system for the supply of current for light and power to the following:

(a) Administration Building
(b) Toll Booth System in the Toll Plaza
(c) Beacon Lights
(d) Navigation lights on 32 bridge piers and on the Suspended Spans
(e) Lighting for bridge cables. Total length of cables is approximately 15,200 linear feet.
(f) Floodlights for bridge towers
(g) Fog Bell Controls
(h) Receptacles and lights and switches in the interiors of the towers, cable anchorages, cable bents and to Control room in towers for power supply to elevators that will be installed by others.

The principal items of work include:

Complete Bridge Lighting including conduit, cable, Light Standards, luminaires, lamp ballasts, foundations, Beacon lights and Flashers and Service Boxes	23,000 L. F.
Navigation Lights	70 Ea.
Transformer Houses and Equipment	2
Equipment for Substations on Structure	4
Cable Lighting including lamps, cable, boxes, and floodlights	15,200 L. F.

Plans, Specifications, Proposal Form and Contract Documents for the work are on file in the office of the Mackinac Bridge Authority and in the office of D. B. Steinman, Consulting Engineer, 117 Liberty Street, New York 6, New York, and may be inspected by prospective bidders during office hours.

Plans, Specifications, Proposal Form and Contract Documents may be obtained from D. B. Steinman, Consulting Engineer, 117 Liberty Street, New York 6, New York upon application and payment of a fee of thirty-five ($35.00) dollars, fifteen ($15.00) dollars of which will be refunded upon return of the Plans to non-bidders, and all of which will be returned to bidders.

Bids must be made upon the proposal form included in the Contract Documents. Each proposal must be accompanied by draft or certified check payable to the order of the Mackinac Bridge Authority for the sum of fifty thousand ($50,000.00) dollars.

The right is reserved to reject any or all bids.

MACKINAC BRIDGE AUTHORITY
Prentiss M. Brown, Chairman

April 25, 1957

OFFICIAL PROPOSALS

RATE: The rate for Official Proposal advertising is $2.10 per line or fraction set solid. Where the advertisement is set other than solid, the space is measured by total space occupied and charged on basis of 12 lines to the inch.

CLOSING DATE: Friday 10:30 A.M. for issue dated the following Thursday.

SEND COPY TO: Official Proposal Division, Engineering News-Record P.O. Box 12 New York 36, N. Y.

Bids: May 16, 1957.

New York State Road Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of the Highway Law, Article 2, Title 9 of the Public Authorities Law, and special provisions for projects financed with Federal Aid Funds, sealed proposals will be received until ten-thirty o'clock A.M., advanced standard time, which is nine-thirty o'clock A.M., eastern standard time, on the 16th day of May 1957, by Henry A. Cohen, Director, Bureau of Contracts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following projects:

County	Contract No.	Name	Miles	Type	Deposit	Estimated Cost of Work
DISTRICT No. 1, G. L. NICKERSON, District Engineer, 333 Broadway, Albany, N. Y.						
Albany (Rte. 85A)	R.C. 57-50	North, S.H. 124	0.31	Asph. Conc., Opt. 0.28 Mi. Misc. Work 0.03 Mi.	$2,000 Plans $10	$18,000
Essex (Rte. 9)	FARC 57-51	Schroon Lake-North Hudson, Pt. 2, S.H. 5180 Project F-383(11)	0.74	9" Cem. Conc. Pavt. 24' Wide 0.69 Mi. Misc. Work 0.05 Mi. Reinf. Conc. Closed Boxed Br. 30'	$21,000 Plans $10	383,000
DISTRICT No. 2, LACY KETCHUM, District Engineer, 109 No. Genesee St., Utica, N. Y.						
Oneida (Rte. 49 & 12C)	FARC 57-48	Mohawk River Road-Marcy, S.H. 296 Whitesboro-Carey Corners, S.H. 5547-5547C.A. Whitesboro-Trenton, S.H. 5325 Proj. U-5180(4)	1.33 0.97 (Acc.)	9" Cem. Conc. Pavt. 26' 24' Var. Wide 1.70 Mi. Asph. Conc. Opt. 0.48 Mi. Misc. Work 0.42 Mi. 1 Hy. Sep. Comp. I-Beam 189.2' 1 Hy. Cantilever Truss 316'	$79,000 Plans $278	1,431,000
Madison & Oneida	C.R. 57-1	City of Oneida North-South Arterial Connection, FASH 56-2, Oneida-Southbay, Pt. 1, S.H. 1110		Removal & Reinterment of Human Remains	$125 Plans $10	2,200
DISTRICT No. 4, B. F. PERRY, District Engineer, Barge Canal Terminal, Rochester, N. Y.						
Livingston (Rte. 15)	FARC 57-52	Conesus-Wayland, S.H. 1321 Proj. F-599(4)	4.21	Asph. Conc. 4.09 Mi. Misc. Work 0.12 Mi.	$30,000 Plans $25	545,000
DISTRICT No. 5, E. G. H. YOUNGMANN, District Engineer, 65 Court St., Buffalo, N. Y.						
Erie (Rte. 20A)	FARC 57-54	Orchard Park-East Aurora, S.H. 1066 Proj. F-1054(3)	1.09	Asph. Conc., Opt. 1.07 Mi. Misc. Work 0.02 Mi.	$12,000 Plans $10	224,000
Erie (Rte. 5)	FARC 57-55	Evans Center-Farnham, S.H. 5634 Farnham-Irving, S.H. 5600 Proj. F-736(6)	6.61	Asph. Concrete	$45,000 Plans $10	795,000
DISTRICT No. 6, J. H. THOMAS, District Engineer, 30 W. Main St., Hornell, N. Y.						
Schuyler (Rte. 224 & 13)	FARC 57-58	Montour Falls-Alpine, Pt. 2, S.H. 999 Alpine-Cayuta, Pt. 1, S.H. 1233 P.S.C. 5349 & Cayuta-Newfield, S.H. 5474A-P.S.C. 5350 Proj. F-400(5), F-560(5)	4.67	Asph. Conc., Opt.	$20,000 Plans $10	381,000
Schuyler (Rte. 14)	FARC 57-59	Watkins Village-Franklin St., S.H. 5335, Watkins-Yates County Line, S.H. 5334, Gabriels Corners-Starkey, Pt. 1, S.H. 1918 & Gabriels Corners-Starkey, Pts. 1&2, Starkey-Dresden, Pt. 1, S.H. 8399 Project F-505(6)	3.56	Asph. Conc., Opt.	$110,000 Plans $25	1,987,000
Steuben (Rte. 36)	FARC 57-60	Arkport-Dansville, S.H. 5352-5352A Project F-579(5)	5.11	Asph. Conc., Opt. 5.05 Mi. Misc. Work 0.06 Mi.	$52,000 Plans $15	955,000
Steuben (Rte. 36)	FARC 57-61	Hornell-Arkport, S.H. 5254 Project F-619(4)	2.71	Asph. Conc.	$11,000 Plans $10	199,000
Steuben (Rte. 15)	FARC 57-63	Erwin-Lawrenceville, Pt. 1, S.H. 1593 Project F-593(9)	3.81	Asph. Conc.	$18,000 Plans $10	329,000
DISTRICT No. 7, R. W. SWEET, District Engineer, 444 Van Duzee St., Watertown, N. Y.						
St. Lawrence (Rte. 37)	FARC 57-47	Morristown-Hammond, Pt. 2, S.H. 970-970A Project F-650(5)	4.55	Asph. Conc. Opt.	$32,000 Plans $25	577,000
DISTRICT No. 8, K. G. RAUER, District Engineer, Pleasant Valley Road, Poughkeepsie, N. Y.						
Columbia	TSP 57-1P	Taconic State Parkway, Sect. 9B, Part 2 (West Taghkanic-Martindale)	8.02	Asph. Conc. Opt. 7.94 Mi. 8" Unreinf. Cem. Conc. Var. Wide 0.09 Mi.	$180,000 Plans $50	2,482,000
Columbia	FASH 57-10 FARC 57-49	Rhinebeck-Hudson, Pt. 5, S.H. 8311 Livingston-Hudson, Pt. 2, S.H. 5073 Rit Van Winkle Bridge-Buckley Corners-Claverack, Pt. 1 and East Approach Rip Van Winkle Bridge Intersect. Project F-492(6), F-863(1)	3.31 (1.35) (Acc.)	9" Cem. Conc. Pavt. 2 at 24' Var. Wide 1.11 Mi. Asph. Conc. 0.47 Mi. Misc. Work 0.08 Mi.	$95,000 Plans $25	1,729,000
Ulster (Rte. 213)	FARC 57-64	Kingston-High Falls, S.H. 229 High Falls-Stone Ridge, S.H. 1464 Project S-461(1)	1.99	Asph. Conc. Opt.	$25,000 Plans $10	400,000
Ulster (Rte. 32)	FARC 57-72 9A 57-1	West Approach to Kingston-Rhinecliff Bridge (Rte. 9W to Rte. 32), Kingston-Ulster Landing, S.H. 306 Project S-479(1)	1.99 (0.76) (Acc.)	9" Cem. Conc. Pavt. 48' Var. Wide 1.72 Mi. Asph. Conc. Opt. 0.94 Mi. Hy. Sep. Prestress. Conc. Beam 155.5'	$72,000 Plans $15	1,349,000
Westchester	FINETC 57-3	New York State Thruway-New England Section Sub. NE-5 (Rye Interchange Area, East of Boston Post Road) Project I-IN-1068(13)	0.49	Modification to Railroad Facilities and Re-Routing of Communication Lines	$18,000 Plans $25	336,000
DISTRICT No. 9, J. C. FEDRICK, District Engineer, 71 Frederick St., Binghamton, N. Y.						
Chenango (Rte. 41)	FARC 57-27	Afton-Coventry, S.H. 5098 Project S-668(3)	3.55	Asph. Conc., Opt. Widening Two East. Bridges	$20,000 Plans $10	364,000
Sullivan	FESS 57-6	Barryville-Yulan, C.R. 21 Project ER-26(2)	1.86	Asph. Conc., Opt.	$13,000 Plans $15	238,000

Any projects in this letting that are on the Federal Aid highway systems are subject to the provisions of the "Federal-Aid Highway Act of 1956", being Public Law 627, 84th Congress, approved June 29, 1956, and are also subject to the applicable New York State statutes.

In compliance with the provisions of Section 115 (Prevailing Rate of Wage) Public Law 627, the minimum wages to be paid laborers and mechanics are included in wage schedules that are set out in the bid proposal.

Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts, Albany, N. Y., and at the office of the District Engineers noted above, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

The deposit for Plans and Proposal Forms for each contract is indicated above. A refund will be made in full to bidders for return of one set, in good condition, within 30 days of award, or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

Special attention of bidders is called to "General Information for Bidders" in the proposal, specification, and contract agreement, and to the special provisions applying to projects financed with federal funds. Award of a contract is subject to priorities and allocations under the Defense Production Act of 1950, as amended, and all regulations issued thereunder.

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Laws, as set forth in "Instructions to Bidders".

The right is reserved to reject any or all bids.

JOHN W. JOHNSON
SUPT. OF PUBLIC WORKS

OFFICIAL PROPOSALS

Bids: May 21, 1957.

City of Richmond, Virginia

NOTICE TO BIDDERS

Sealed Proposals will be received at the office of the Director, Purchases and General Services, 4th floor, Mosque Building, Laurel and Main Streets, Richmond, Virginia, until but not later than 11 o'clock A. M. E.S.T., May 21, 1957, at which time they will be publicly opened and read aloud, for the following work which may be awarded in whole or in part.

Type of Work: The work to be done is part of the Sewage Disposal Project, is entitled "Division V. Outside Piping and Miscellaneous Structures", and comprises the furnishing of all labor, materials, equipment and work incidental thereto for the construction of the sludge beds, sludge lagoons, outside piping, railroad siding and miscellaneous structures, as shown, specified and directed.

Location: The Outside Piping and Miscellaneous structures will be located at the site of the Sewage Treatment Plant, adjacent to the southwest bank of the James River at Rocketts Wharf, northeast of the United States Naval Diesel School, in the City of Richmond, Virginia.

The proposal and other contract documents may be examined at the office of the Director of Public Works, 217 Governor Street, Richmond, Virginia, and at the office of Greeley and Hansen, Engineers, 720 South State Street, Chicago 4, Illinois. Copies of the contract documents may be obtained from the office of the Director of Public Works upon the deposit of Twenty-Five Dollars for each set. Any general contractor who submits a bona fide bid on the project will be refunded his payment in full for not more than three sets, and will be refunded fifteen dollars per set for each additional set. All others will be refunded fifteen dollars per set upon the return of the documents in good condition within ten days after the opening of the bids.

J. W. Huffman
Director of Purchases and General Services

Bids: May 28, 1957.

Contract TA-240.001

ADVERTISEMENT
THE PORT OF NEW YORK AUTHORITY
TETERBORO AIRPORT
EXTENSION OF INDUSTRIAL AVENUE

Sealed proposals for the construction of an extension to Industrial Avenue in a southerly direction at and adjacent to Teterboro Airport, New Jersey, will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 Eighth Avenue, New York 11, N. Y., until 2:30 P.M. on Tuesday, May 28, 1957, at which time said proposals will be opened and read in Room 1108.

Contract documents may be seen at the office of the Engineer of Design of the Authority, Room 1115. Documents will be furnished upon deposit of $30.00 per set for not more than three sets to any one company (each set including one copy of the contract drawings). Additional sets will be furnished upon payment of $30.00 per set, which payment is not returnable. Deposits and payments shall be delivered to the Treasury Department, Room 1001, where a receipt will be issued. The receipt shall be delivered to Room 1115, where the documents will be furnished.

Those who have submitted a bid on the contract will receive a refund of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals. Those who have not submitted a bid will receive a refund of one-half of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Donald V. Lowe, Chairman

New York, May 2, 1957

Contractors Watch This Section—

for new projects. Publish your announcements through the proposal sections of *Engineering News-Record* and get their bids.

OFFICIAL PROPOSALS

Bids: June 4, 1957.

Contract BP-150.005

ADVERTISEMENT
THE PORT OF NEW YORK AUTHORITY
BROOKLYN-PORT AUTHORITY PIERS
PIER 1
BULKHEAD AND DECK

Sealed proposals for the construction of a bulkhead and pier deck for Pier No. 1 to be constructed at the Brooklyn-Port Authority Piers will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 Eighth Avenue, New York 11, N. Y., until 2:30 P.M. on Tuesday, June 4, 1957, at which time said proposals will be opened and read in Room 1108.

Contract documents may be seen at the office of the Engineer of Design of the Authority, Room 1115. Documents will be furnished upon deposit of $30.00 per set for not more than three sets to any one company (each set including one copy of the contract drawings). Additional sets will be furnished upon payment of $30.00 per set, which payment is not returnable. Deposits and payments shall be delivered to the Treasury Department, Room 1001, where a receipt will be issued. The receipt shall be delivered to Room 1115, where the documents will be furnished.

Those who have submitted a bid on the contract will receive a refund of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals. Those who have not submitted a bid will receive a refund of one-half of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Donald V. Lowe, Chairman

New York, May 2, 1957

Bids: May 21, 1957.

Contract PN-250.010

ADVERTISEMENT
THE PORT OF NEW YORK AUTHORITY
PORT NEWARK
CONNECTING WATER MAIN

Sealed proposals for the furnishing and installation of a water main at Port Newark, New Jersey, will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 Eighth Avenue, New York 11, N. Y., until 2:30 P.M. on Tuesday, May 21, 1957, at which time said proposals will be opened and read in Room 1108.

Contract documents may be seen at the office of the Engineer of Design of the Authority, Room 1115. Documents will be furnished upon deposit of $30.00 per set for not more than three sets to any one company (each set including one copy of the contract drawings). Additional sets will be furnished upon payment of $30.00 per set, which payment is not returnable. Deposits and payments shall be delivered to the Treasury Department, Room 1001, where a receipt will be issued. The receipt shall be delivered to Room 1115, where the documents will be furnished.

Those who have submitted a bid on the contract will receive a refund of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals. Those who have not submitted a bid will receive a refund of one-half of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Donald V. Lowe, Chairman

New York, May 2, 1957

U. S. Government

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-4896) will be received at Kanab, Utah, until May 28, 1957, for furnishing labor and materials for access roads, streets, and utilities for Page, Arizona, Colorado River Storage Project, Arizona-Utah. Location in the Navajo Indian Reservation. Principal items are: 490,000 cu. yds. excavation; 82,300 lin. ft. excavation and backfill of trenches; furnishing and laying 33,100 lin. ft of 4-, 6-, 8-, 10-, and 12-inch diameter clay sewer pipe; furnishing and laying 42,100 lin. ft. of 6-, 8-, 10-, 12-, and 14-inch diameter water main pipe; and other work. Completion time 360 days. For particulars, address Bureau of Reclamation, P. O. Box 267, Kanab, Utah; or Building 53, Denver Federal Center, Denver 2, Colorado. W. A. Dexheimer, Commissioner.

U. S. Government

DEPARTMENT OF HIGHWAYS, MONTPELIER, VERMONT. NOTICE TO CONTRACTORS. Sealed proposals will be received by the department at the State Office Building until 11:00 o'clock A.M. Eastern Daylight Saving Time (10:00 o'clock A.M. Eastern Standard Time) on Friday, May 17, 1957, for the construction of the following project: VERNON-GUILFORD IN-I-001-1 (5); In the Towns of Vernon-Guilford; the Bernardston, Massachusetts-Brattleboro, Vermont road; beginning approximately 3.989 miles northerly of the Massachusetts-Vermont State Line and extending northerly 1.890 miles. Construction being grading, drainage, sub-base with a bituminous concrete surface course including a 1-span, 99', Composite WF-Beam bridge for each lane and a 1-span 238', composite WF-Beam bridge over the Interstate. Complete information at said office; plans on display at the office of R. O. Munn, District Highway Engineer; Brattleboro, Vermont; minimum wage and truck rates have been established. Contractors bidding on construction involving over $25,000.00 must be prequalified in accordince with Department Regulations. Right is reserved to reject any or all bids and waive any technicalities. Contractors may submit a bid on the Guilford-Vernon IN-001-1 (4) and Vernon-Guilford IN-I-001-1 (5) projects separately and/or as a combined project.

William Poeter
Commissioner of Highways

Montpelier, Vermont
April 25, 1957

DEPARTMENT OF HIGHWAYS, MONTPELIER, VERMONT. NOTICE TO CONTRACTORS. Sealed proposals will be received by the department at the State Office Building until 11:00 o'clock A.M. Eastern Daylight Saving Time (10:00 o'clock A.M. Eastern Standard Time) on Friday, May 17, 1957, for the construction of the following project: GUILFORD-VERNON IN-001-1 (4) & VERNON-GUILFORD IN-I-001-1 (5); In the Towns of Guilford-Vernon; the Bernardston, Massachusetts-Brattleboro, Vermont road; beginning at the Massachusetts-Vermont State line and extending northerly 5.879 miles. Construction being grading, drainage, sub-base with a bituminous concrete surface course including a 1-span, 99', composite WF-Beam bridge for each lane and a 1-span, 238', composite WF-Beam bridge over the Interstate. Complete information at said office; plans on display at the office of R. O. Munn, District Highway Engineer; Brattleboro, Vermont; minimum wage and truck rates have been established. Contractors bidding on construction involving over $25,000.00 must be prequalified in accordance with Department Regulations. Right is reserved to reject any or all bids and waive any technicalities. Contractors may submit a bid on the Guilford-Vernon IN-001-1 (4) and Vernon-Guilford IN-I-001-1 (5) projects separately and/or as a combined project.

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William Poeter
Commissioner of Highways

Montpelier, Vermont
April 25, 1957

OFFICIAL PROPOSALS

Bids: May 9, 1957

New York State Road Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.,—Pursuant to the provisions of the Highway Law, sealed proposals will be received until ten-thirty o'clock A.M., advanced standard time, which is nine-thirty o'clock A.M., eastern standard time, on the 9th day of May 1957, by Henry A. Cohen, Director, Bureau of Contracts, 14th Floor, Albany, N. Y., for the following projects:

DIST. NO. 8, K. G. Rauer, District Engineer, Pleasant Valley Road, Poughkeepsie, N. Y.

County	Contract No.	Name	Miles	Type	Deposit	Estimated Cost of Work
Dutchess and Ulster	M.H.B. 57-1	Mid-Hudson Bridge	....	Cleaning & Painting Existing Bridge	$7,000 Proposal $5	$125,000

Any projects in this letting that are on the Federal Aid highway systems are subject to the provisions of the "Federal-Aid Highway Act of 1956", being Public Law 627, 84th Congress, approved June 29, 1956, and are also subject to the applicable New York State statutes.

In compliance with the provisions of Section 115 (Prevailing Rate of Wage) Public Law 627, the minimum wages to be paid laborers and mechanics are included in wage schedules that are set out in the bid proposal.

Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts, Albany, N. Y. and at the office of the District Engineers noted above, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

The deposit for Plans and Proposal Forms for each contract is indicated above. A refund will be made in full to bidders for return of one set, in good condition, within 30 days of award, or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

Special attention of bidders is called to "General Information for Bidders" in the proposal, specification, and contract agreement. Award of a contract is subject to priorities and allocations under the Defense Production Act of 1950, as amended, and all regulations issued thereunder.

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Laws, as set forth in "Instructions to Bidders".

The right is reserved to reject any or all bids.

JOHN W. JOHNSON
SUPT. OF PUBLIC WORKS

OFFICIAL PROPOSALS

The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following projects:

DIST. NO. 8, K. G. Rauer, District Engineer, Pleasant Valley Road, Poughkeepsie, N. Y.

County	Contract No.	Name	Miles	Type	Deposit	Estimated Cost of Work
Dutchess and Ulster	M.H.B. 57-1	Mid-Hudson Bridge	....	Cleaning & Painting Existing Bridge	$7,000 Proposal $5	$125,000

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The right is reserved to reject any or all bids.

JOHN W. JOHNSON
SUPT. OF PUBLIC WORKS

EMPLOYMENT OPPORTUNITIES

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The advertising rate is $31.80 per inch for all advertising appearing on other than a contract basis. Frequency rates quoted on request.

An advertising inch is measured 7/8" vertically on a column—3 columns—30 inches to a page.

Subject to Agency Commission.

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Not subject to Agency Commission.

Send NEW ADS and Inquiries to Classified Advertising Division of ENGINEERING NEWS-RECORD
P. O. Box 12, N. Y. 36. May 16th issue closes May 6th

REPLIES (Box No.): Address to office nearest you c/o This publication Classified Adv. Div.
NEW YORK: P. O. Box 12 (36)
CHICAGO: 520 N. Michigan Ave. (11)
SAN FRANCISCO: 68 Post St. (4)

POSITIONS VACANT

Position open for Junior College Instructor in Drafting and Engineering Drawing. Apply, Director, Coalinga College, California.

Associate Professors, Assistant Professors, or Instructors, (rank and salary determined by training and experience) to teach in the Department of Engineering Drawing, which administers courses in Graphics, Engineering Mechanics, and Engineering Orientation. Year round opportunities for participation on research which replaces part of teaching load during the academic year. Apply to Professor Carson P. Buck, Chairman, Department of Engineering Drawing, Syracuse University, Syracuse 10, N. Y.

Structural engineer for building design. Ketchum and Konkel, Consulting Engineers, 1090 Fox Street, Denver 4, Colorado.

Teaching position in civil engineering and/or mechanics starting next September. Salary and academic rank dependent on qualifications. Salary up to $7,500.00. Location New York State. P-1840, Engineering News-Record.

Assistant Professor to teach mechanics and/or civil engineering starting next September. Salary $6,500.00 Ph.D. desirable. Location New York State. P-1839, Engineering News-Record.

Designers - Electrical - Piping - Struct. Power Plants and Industrial Buildings. Marbarry Corp. 120 Greenwich St., New York City 6, N. Y. REctor 2-3749.

Gunite Superintendent—Wanted immediately. Middle Atlantic States. State age, experience, availability, salary desired. P-1640, Engineering News-Record.

SHOP FOREMAN

Thoroughly Familiar & Experienced
In Maintenance of All Types of
Heavy Construction Equipment
Permanent Position for Satisfactory Man
Immediate Opening
Reply direct—stating full particulars—
Salary—etc.

A. S. WIKSTROM, INC.
Skaneateles, New York

POSITIONS VACANT

Structural Steel Detailers, Checkers and Sales Engineer Position. Open. Location center of Eastern Oklahoma resorts area. P-1892, Engineering News-Record.

Associate and assistant professors for fields of advanced strength, elasticity, dynamics and fluid mechanics. Dept. of Applied Mechanics, Univ. of Kansas, Lawrence, Kansas.

Reinforcing Steel Detailer wanted by Bar Fabricator. Excellent salary and good chance for advancement. Two to three years experience preferred. Send resume or phone York, Pa. 7741, Brocker Mfg. Supply Co.

Map draftsman for surveyors office located in Chicago, Ill. State qualifications in 1st reply and sample of lettering. P-1692, Engineering News-Record.

Checkers: Heavy pressure vessel shop needs experienced old timers. Top wages and overtime. Many fringe benefits. Florida type climate and country's finest hunting and fishing. Some detailers also needed. Permanent and expanding work load. Apply with full particulars and photo to Emile Lusted, Chief Engineer, Delta Tank Manufacturing Co., Baton Rouge, Louisiana.

Structural Engineer for permanent position with established consulting engineering firm in South Florida. Experience in multi-story design, reinforced concrete and structural steel desirable. Salary open. P-1958, Engineering News-Record.

SALES ENGINEERS

A major steel company has need for sales engineers to promote and sell fabricated products in middle Atlantic states. Excellent opportunities for men 25 to 30 years old with engineering background and a desire for sales work. Attractive starting salary with company car, expenses and bonus plan.

SW-1681, Engineering News-Record,
Class. Adv. Div., P.O. Box 12, N. Y. 36, N. Y.

POSITIONS VACANT

A new expanding construction materials laboratory in the Southwest needs a manager experienced in materials and soils. Graduate engineer desirable but not essential. Dynamic, aggressive, administrator is essential. Income $12800 plus percentage of profit. Please send brief resume of experience, references, etc. P-1949, Engineering News-Record.

City Engineer: Graduate Civil Engineer with municipal experience in street improvements by the direct assessment district method. Starting salary, $7,000. Applicants should apply to Personnel Officer, City of Boulder, Colorado.

Two teaching appointments in C.E. Department, work to begin Sept 1, 1957. Salary and rank depend upon qualifications. M.S. degree not required, may be obtained while teaching. Dept. of Civil Engineering, Univ. of Nebr., Lincoln, Nebr.

Engineers—Architects—Draftsmen. Experienced in design and supervision of construction on water works, sewers and general building construction. State experience, age, salary requirements and earliest date available. P-1813, Engineering News-Record.

Estimator-Project Manager or Assistant for building construction. Well established, growing Company in Rhode Island. Three to Five years contractor experience desirable. Good opportunity for advancement. P-1970, Engineering News-Record.

(Continued on page 125)

OPPORTUNITY FOR YOUNG GRADUATE ENGINEERS

WITH

Sverdrup & Parcel Engineering Co.

1134 LOCUST ST. ST. LOUIS 1, MO.

Additional Openings for

DESIGNERS **DETAILERS**

Overseas Openings Available For Engineers 30 to 45
With Extensive Experience In Highway Engineering

WORK AND ADVANCE IN PROFESSION OF HIGHWAY ENGINEERING WITH HIGHLY SKILLED ASSOCIATES IN A GOOD PLACE TO WORK. PERMANENT POSITIONS FOR QUALIFIED MEN. PERIODICAL REVIEWS OF SALARY. LIBERAL EMPLOYMENT BENEFITS, RETIREMENT AND INSURANCE PLANS.

Please Write Fully to Above Address

CIVIL ENGINEERS

for

GREENLAND

With specific experience in:

1. Design & Control of Concrete Mixes:
   Placing of Reinforced Concrete
2. Soils & Materials Testing

High Earnings
Good Job Site Facilities
No Family Quarters

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1300 Statler Bldg. Boston 16, Mass.
HAncock 6-8188
or
320 Broadway New York 16, N. Y.
WOrth 2-3724

Highway & Bridge Engineers Designers & Draftsmen

Career opportunities for men interested in professional recognition. Excellent working conditions and employee benefits including liberal retirement program.
Openings in Pennsylvania, Maryland, Florida, West Virginia, Mississippi and overseas.

Air Mail Resume TO R. L. SHAW, Personnel Director

MICHAEL BAKER, Jr., INC.

BAKER BLDG. *Consulting Engineers* ROCHESTER, PA.

STRUCTURAL ENGINEER

WANTED

For structural steel fabricating plant in Philadelphia. Applicant should have experience in estimating, detailing, etc. Requirements of college graduate engineer are not essential provided applicant has sufficient education and practical experience. Good position and excellent opportunity for advancement. Enclose complete resume of personal history, education and experience.

P-1929, Engineering News-Record,
Class. Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

PROJECT ENGINEERS

Plant Engineering Department of a large midwest research and development laboratory has several positions open for Project Engineers with a good academic background in Mechanical, Electrical, Chemical or Civil Engineering. Minimum of 5 years' experience required.

Responsibilities will involve coordinating the requirements, design, and construction of new buildings and facilities. Ability to provide close liaison between the research staff, architect-engineer, and construction contractor is necessary. *Write*

P-1819, Engineering News-Record,
520 N. Michigan Ave., Chicago 11, Ill.

GRADUATE CIVIL ENGINEER

Or equivalent experience to assist Superintendent of Public Works Poughkeepsie, New York. Salary dependent upon experience and ability. Replies treated confidentially. Give experience and full details in reply to

HAROLD R. DEAN
Acting City Manager
City Hall Poughkeepsie, New York

BRIDGE & HIGHWAY ENGINEERS DRAFTSMEN

BROOKHART & TYO
Consulting Engineers
3501 N. Front St. Harrisburg, Pa.

SAN FRANCISCO CITY AND COUNTY IMMEDIATE EMPLOYMENT POSSIBILITIES VARIETY OF PUBLIC WORKS PROGRAMS

	7-1-57
Junior Engineer (Civil)	$480-$550
Assistant Engineer I (Civil)	$525-$630

For Further Information and Applications, *inquire:*

San Francisco Civil Service Commission
154 City Hall
San Francisco, California

PROJECT MANAGER

Required for Large Bridge Central America. Must be experienced in Cofferdams, long-span steel erection and concrete work. Engineering graduate desired. Knowledge of Spanish helpful. Send resume to

CARIBBEAN CONSTRUCTION CORP.
156 Almeria Ave. Coral Gables, Fla.

EXPERIENCED HYDRAULICS ENGINEER WANTED

Graduate engineer experienced in paper mill hydraulics, planning and development of piping layout systems, etc. for large expanding and progressive mill in Maryland. Good salary, all benefits and excellent opportunity for advancement. Send detailed resume of experience and education to

Director of Personnel
West Virginia Pulp & Paper Company
Luke, Maryland

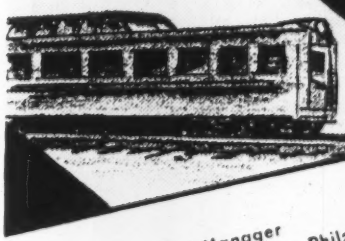
THE BUDD COMPANY
Is Looking for
ENGINEERS

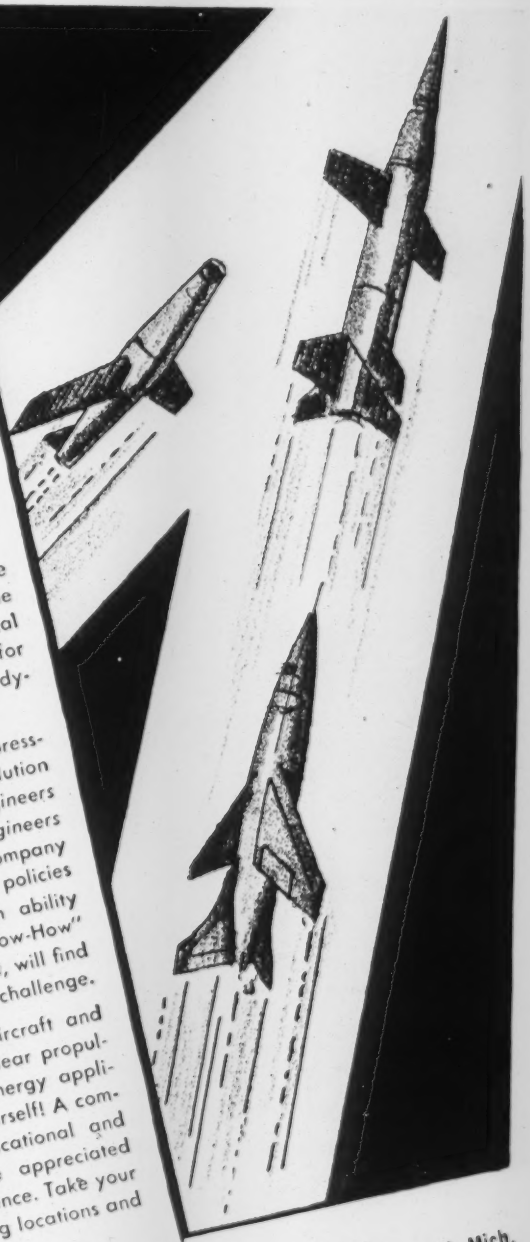
In less than half-a-century, BUDD has grown to an organization with more than 20,000 employees and a world-wide reputation for metal engineering FIRSTS unequaled in the industry. A prime contractor for both the automobile manufacturers and railroads, we have always been regarded as pioneers in the development of metals research programs—not only for industry, but for the wide variety of military and research equipment used for the protection of our country.

A recent contribution by our Airframe Research Department is a solution to the heretofore unsolved problem of practical and efficient manufacture of structures for aircraft and missiles subject to aerodynamic heating.

Other highly diversified but equally pressing problems are before us. Their solution requires time and manpower. — Engineers who are above the average . . . engineers who seek association with a company offering established employment policies and salaries commensurate with ability . . . engineers who have the "Know-How" but lack the opportunity to use it, will find The Budd Company an exciting challenge.

If you are experienced in aircraft and missile structures, jet and nuclear propulsion elements, or nuclear energy applications . . . tell us about yourself! A complete resume of your educational and work background will be appreciated and held in strictest confidence. Take your choice of the four following locations and write today.





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Hunting Park Plant, Phila. 32, Pa.

Personnel Manager
Red Lion Plant, Phila. 18, Pa.

Budd

THE BUDD COMPANY

Personnel Manager
Charlevoix Plant, Detroit 15, Mich.

Personnel Manager
Chase Plant, Gary, Ind.

STRUCTURAL
ENGINEERS
DESIGNERS
DRAFTSMEN

Prefer several years or more experience in any of these fields:

BRIDGES

BUILDINGS
EXPRESSWAYS
HYDRO PROJECTS
TEST FACILITIES*

Will consider lesser experience with good educational background, including several recent graduates to round out a planned expansion program. Occasional openings for combination field men. These are permanent additions to our regular staffs.

We are professional engineers engaged primarily in design which covers a wide scope of practice. The variety and unusual character for example, the proposed world's largest bridge project—offer excellent opportunity for professional development and advancement.

Immediate openings in our St. Louis general offices and occasionally in our San Francisco branch office. Confidential interviews can also be obtained at Washington, D.C., and Portland, Oregon.

Paid vacation, sick leave, holiday, overtime. Excellent Employee Benefits Plan provides retirement income plus life and disability insurance. Blue Cross. Moving allowance.

Please write fully, including salary data, to

SVERDRUP & PARCEL, Inc.

ENGINEERS — ARCHITECTS

915 Olive St. Louis 1, Mo.

*We are designers of the technical facilities for the Arnold Engineering Development Center, operated by our subsidiary, ARO, Inc.

ENGINEERS

Long established firm of consulting engineers with world-wide practice needs both beginners and experienced civil, electrical, mechanical, and foundation engineers for interesting work on large dams, powerplants, and river control works. Permanent positions. Liberal employee benefits. Starting salaries dependent on qualifications. Please send complete resume to Hugo Niemi, Personnel Manager.

HARZA ENGINEERING CO.

400 W. Madison St. Chicago 6, Ill.

CIVIL *Engineers*

Work and live in wonderful WISCONSIN

A rapidly expanding highway program offers:

Permanent civil service positions
Rapid advancement Challenging work

Starting salary based on experience

Civil engineering degree or professional registration required.

Write to:
Personnel Officer
State Highway Commission of Wisconsin
State Office Building
Madison 2, Wisconsin

Opportunities in Alaska

SENIOR STRUCTURAL ENGINEER
CONCRETE ENGINEERS

Excellent salary—plus substantial overtime. Transportation and travel pay, paid vacation and sick leave.

Send complete information covering qualifications, past earnings, and availability.

METCALF & EDDY

1300 Statler Building, Boston 16, Mass.

Field Engineer

Building Construction firm in Northern New York desires Civil Engineers 20 to 40 years of age for immediate employment, permanent positions. Vacations, Life and Medical Insurance afforded. Opportunity for advancement.

Call JOSEPH TOKOS
JOHN W. ROUSE CONSTRUCTION CORP.
8 Church St. Gouverneur, New York
Telephone 860

ENGINEERS
Designers Detailers Draftsmen
for work on
Bridges, Expressways, Turnpikes

PERMANENT POSITIONS DEPENDING ON EXPERIENCE AND ABILITY
PAID VACATION, SICK LEAVE
HOSPITALIZATION, LIFE INSURANCE
INCLUDE EDUCATION, EXPERIENCE, REFERENCES AND SALARY EXPECTED IN APPLICATION LETTER

Howard, Needles, Tammen & Bergendoff

1805 GRAND AVE. KANSAS CITY 8, MO.

Highway Engineers

Kentucky, the beautiful Bluegrass state, has positions available immediately in Bridge and Highway Design, Location and Construction. Attractive salary, retirement, vacation and other benefits. Rapid advancement possible with challenging work in expanding road program.

Contact Personnel Officer,
Kentucky Department of Highways,
Frankfort, Ky. Phone CA 72231.

ENGINEER, CIVIL

For

FIELD WORK

Resident Engineer of Construction to supervise construction of bridge and highway projects in Western New York State. Will be in over-all charge of a number of Resident Engineers. Previous experience on similar work and P. E. license, preferably in New York State, required.

HARDESTY & HANOVER
CONSULTING ENGINEERS

101 Park Ave., N.Y.C. Or 9-1360

SENIOR BRIDGE DESIGN ENGINEER
FOREIGN EMPLOYMENT

Engineer well versed in design (10—15 years experience) and construction of highway bridges needed to supervise structural program of highway mission in Near East. Country wide operation. Liberal salary, transportation for family plus other attractive allowances and benefits. Send complete resume including list of references.

P-1928, Engineering News-Record, Class. Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

POSITIONS VACANT

(Continued from page 121)

Wanted—Experienced estimator for heavy and highway construction. Young man not to exceed 40 years of age. Phone AT 8-2694, Derby, Colorado or Write to Box 758, Derby, Colo.

City Engineer: Registered professional engineer desired for City of approximately 18,000. Municipal experience desired, but not mandatory. Full details of education, experience and qualifications should be furnished. Contact Mayor, Fremont, Nebraska.

Laboratory—Ass't. Manager: Man with engrg. background desired for central lab. of lge. port. cement mfgr. in Chicago. Coordinate work of physical and chemical sections. Ability to analyse data and prepare reports. Send resume of work exp., pers. data, and salary required. P-5010, Engineering News-Record.

Inspector of Construction—35—60 yrs., with strong background of experience in inspection of roads and sewers. Experience in surveying and drafting also desirable. Salary $6,000. Location—Princeton, New Jersey. P-5021, Engineering News-Record.

Wanted: Mechanical Engineer for design of heating, ventilating and air conditioning. Contact W. E. Jobusch, Physical Plant Dept., Purdue University, West Lafayette, Indiana.

Engineers—Structural Steel Sales Promotion we are searching for two civil or architectural engineers to handle technical and promotional work for the structural steel fabricating industry. Applicants should have a B.S. in C.E., or A.E., and preferably should be registered. Experience in design and construction of structural steel is desirable. We have a field engineer position at Philadelphia, Pennsylvania, for which we seek a young man preferably under 30. We have a district engineer position at Birmingham, Alabama, for which we seek a more experienced man preferably between 35 and 45 years of age. Salaries for these two positions are open, depending upon experience. Insurance and retirement plans available. These are permanent positions and offer an excellent opportunity for showing initiative and judgment. Send complete resume, recent photo if available, and salary requirements by mail to American Institute of Steel Construction, Inc., 101 Park Avenue, New York 17, New York.

Wanted—Experienced Shop Superintendent for Structural and Plate Fabricating Plant of 600 ton per month capacity. To have had experience in labor negotiations. Mechanical Engineering background preferred, but not essential. Excellent opportunity with old established company in Middlewest with young management. Reply giving experience, age, education and salary requirements to P-1979, Engineering News-Record.

Shop Foreman thoroughly familiar and experi- enced in maintenance of all types of heavy construction equipment. Permanent position for satisfactory man. Immediate opening. Reply direct stating all particulars—salary, etc. A. S. Wikstrom, Inc., Skaneateles, N. Y.

Civil Engineers and Draftsmen. Minimum 5 years experience, for growing organization doing bridge and expressway engineering with other general civil work. We offer experience in design, drawing, checking and specification writing. Highest salary plus profit sharing. Possibility of future interest in firm. Samuel A. Walker, Jr., P.E., 735 Forest Ave., Birmingham, Mich.

Highway and Bridge Engineers, Designers, Draftsmen, and Chief of Party. Permanent positions available. (Location Southern Connecticut). Send resume of experience to P-1969, Engineering News-Record.

Structural Engineers, with a minimum of three years experience in building design investigate the opportunities in Colorado. Immediate positions are available in many consulting offices in Denver. Address your inquiry to Secretary, Consulting Engineers Association of Colorado, 723 Delaware Street, Denver 4, Colorado for a list of engineering offices interested in your talents.

Store construction Supervisor to expedite and supervise construction of shoe stores. P-5020, Engineering News-Record.

Construction Engineer well experienced in heavy reinforced concrete work. Job in Columbia, S. A., Spanish not required, 1 yr. contract with 1 yr. option; salary plus profit sharing. Send complete resume. P-5024, Engineering News-Record.

EMPLOYMENT AGENCY

Wanted Engineers, Designers, Draftsmen All lines. Chemists, teachers and industrial engineers. Recent grads. Cleveland Engineering Agency 2132 E. 9, Cleveland 15, O.

POSITIONS WANTED

Chief Estimator—Age 31—B.S.C.E. Capable of handling job from bid to completion. Experienced industrial, commercial and institutional. Excellent record. PW-4789, Engineering News-Record.

Contractors Engineer. P.E., 33, experienced in broad phases of building construction desires affiliation with foresighted building and/or heavy construction contractor where he might use his ability and ambition to their mutual advantage. PW-4781, Engineering News-Record.

Structural Engineer, 27, BS desires European job. Immediate or future assignment. 5 years design and field experience. PW-4880, Engineering News-Record.

Concrete and Materials Engineer, registered P.E., 25 years experience in all phases of Concrete and Concreting materials, including being in charge of laboratory testing and field inspection forces. PW-4881, Engineering News-Record.

Architects' Superintendent—ten years experi- ence—desires work in middle Atlantic States. PW-4962, Engineering News-Record.

Estimator, Project Manager, Purchasing. Highway Construction. 40 years experience, 60 years of age, good health, Long Island preferred. PW-4913, Engineering News-Record.

Superintendent, Field Supervision, construct- ing Industrial, commercial, Institutional, Large Scale Housing, Churches, etc. Desires similar position with reliable organization. 25 years experience, resident of New Jersey. Can travel. PW-4891, Engineering News-Record.

POSITIONS WANTED

General Construction. Manager or Superin- tendent. Experience in hospital, schools, monumental, industrial buildings, canals. 34 years experience. Speak English, French, Spanish. Best references. Would like to work South America, Spain or South U.S.A. Available after 2 weeks. PW-4904, Engineering News-Record.

Equipment Supt., Master Mechanic, 45 yrs. old, 26 yrs. experience in field and shop management and administration. With all types construction and equipment. PW-5011, Engineering News-Record.

Designer, Estimator or Construction Supervi- sor with college education, three years experience. Available at once. PW-4993, Engineering News-Record.

Purchasing: Excellent experience in heavy construction equipment, parts, tools and camp supplies, some office management and special expediting. Will relocate. PW-4992, Engineering News-Record.

Electrical Engineer: 20 years experience in construction and design of industrial and process plants. Desires to re-locate in Gulf coast area. Presently Chief Electrical Engineer in Consultants Office. Interested only in position of comparable responsibility with consulting, construction or industrial firm. Available July. PW-4987, Engineering News-Record.

Project Manager & Estimator, 26, single, B.S. in C.E. & Industrial Management, experience responsible position, earthwork, site improvements, paving, sewers, desire position, overseas preferred. PW-4967, Engineering News-Record.

Civil Engineer, Reg. P.E., 31, 7 years varied experience: Heavy construction, highway design, municipal engineering, seeks position where work is challenging and there is opportunity for professional advancement. Prefer Midwest location. PW-4968, Engineering News-Record.

SEARCHLIGHT SECTION

(Classified Advertising)

BUSINESS OPPORTUNITIES

EQUIPMENT USED or RESALE

UNDISPLAYED —RATES— *DISPLAYED*

$2.10 a line, minimum 3 lines. To figure advance payment count 5 average words as a line.

BOX NUMBERS count as one line additional in undisplayed ads.

DISCOUNT of 10% if full payment is made in advance for four consecutive insertions of undisplayed ads.

The advertising rate is $23.60 per inch for all advertising appearing on other than a contract basis. Contract rates quoted on request.

AN ADVERTISING INCH is measured ⅞ inch vertically on one column, 3 columns—30 inches to a page.

EQUIPMENT WANTED or FOR SALE ADVERTISEMENTS acceptable only in Displayed Style.

Send NEW ADVERTISEMENTS or Inquiries to Class. Adv. Div. of Engineering News-Record, P. O. Box 12, N. Y. 36, N. Y. May 16th issue closes May 6th

REPLIES (Box No.)—Address to office nearest you c/o This publication Classified Adv. Div.
NEW YORK: P. O. Box 12 (36)
CHICAGO: 520 N. Michigan Ave. (11)
SAN FRANCISCO: 68 Post St. (4)

SPECIAL SERVICE

Consulting Service Offered on all types of building construction-wide experience in all phases—from planning stage, awarding of contracts, supervision, to completed project —fee reasonable. SS-4846, Engineering News-Record.

WORK WANTED

Prestressed Concrete Problems Solved. Design of beams, special structures & plant layout. WW-5013, Engineering News-Record.

Structural steel and reinforced concrete de- tailing, fast accurate service. P.O. Box 2274, Waterloo, Iowa.

WANTED

Anything within reason that is wanted in the field served by Engineering News-Record can be quickly located through bringing it to the attention of thousands of men whose interest is assured because this is the business paper they read.

Engineers—Foremen—Office Men

Learn latest methods to organize and run work. Prepare for the top jobs.
Send post card for details.

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CONSTRUCTION CONSULTANTS
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STRUCTURAL ENGINEERING
ARCHITECTURAL ENGINEERING
OUR COURSES of instruction by mail HAVE HELPED THOUSANDS to better positions and to pass State Board Examinations. Forty-third year
WILSON *Engineering Corp.*
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Learn how to figure labor, material costs on construction jobs. Write for 30 day free trial.
CONTRACTOR'S SCHOOL, Box 12, Dallas, Tex.

SAVE THOUSANDS!

UNUSED 6 x 6 ARMY TRUCKS

*2½-TON, GMC & INTERNATIONAL

- From Government Storage!
- Unused and Guaranteed!
- Factory-New Condition!
- Reconditioned trucks also available!

Why invest in expensive new trucks and equipment needed to get the roughest off-road jobs done when you can save up to $3,000 on ONE truck alone—and get the job done right!

Compare our tandem axle trucks with front wheel drive, 10 forward speeds, overdrive and new mud and snow tires with similar equipment elsewhere. See for yourself how TWO of our trucks cost you even LESS than one new truck!

If planning to buy a truck, get in touch with us right away. There's no obligation . . . and we deliver on approval!

For Specifications, Prices, Delivery Write, wire or phone COLLECT—JAckson 5-7841
Milton Y. Toombs, Jr. Sales Manager

MEMPHIS EQUIPMENT CO.
Construction and automotive equipment and parts
766 S. THIRD ST. • MEMPHIS, TENN.

BATCHING PLANT: 3 compartment Bins 200 ton capacity, 100 bbl. cement compartment. Bucket Elevator, Cement Screw, 1200 bbl. Cement Bin, complete with motors, etc.

OVERHEAD ELECTRIC TRAVELING CRANES: 10 ton capacity, 56' span, 3 motor, 230 volt, D.C. Also, one 76'6" span with or without 400 ft. outdoor crane runway.

TRUCK CRANES: Lorain T20 complete with crane boom, shovel front and backhoe. Bay City 20 ton, 90 ft. boom, 15 ft. jib, steel erecting crane.

DRAGLINE: P & H model 955, 2½ yd., 90 ft. boom.

BRIDGES: Deck Girder Type—2 Girders each, 44 ft., 54 ft., 65 ft. and 75 ft.

CLAMSHELL BUCKET: Williams 1¼ yd. capacity, excellent condition.

LOCOMOTIVES: 2—5 ton, standard gauge, with geared Caterpillar power units.

CAR PULLER: Stephens Adamson continuous wire rope Car Puller, 20 H.P., 440 volt, heavy duty type.

BELT CONVEYORS: 60" x 170 ft. and 60" x 300 ft., complete.

JAW CRUSHERS: 10 x 15, 10 x 20, 12 x 24, 15 x 36, 18 x 36, 24 x 36, 25 x 40, 30 x 42, 40 x 42, 42 x 48.

GYRATORY & REDUCTION CRUSHERS: All sizes.

WE BUY AND SELL EQUIPMENT THROUGHOUT NORTH AND CENTRAL AMERICA

A. J. O'NEILL
Lansdowne, Pa.
Phila. Phones: MAdison 3-8300—3-8301

LOW COST INSTALLATION AND OPERATION

CABLEWAYS
IMMEDIATE SHIPMENT
ELECTRIC, STEAM or DIESEL
CAPACITY 3 to 20 TONS
SELL, RENT or BUY

FOR DAMS, BRIDGES, DEEP WATERS, FILTRATION AND SEWERAGE PLANTS

FOR SPEED, ECONOMY, EFFICIENCY, FLOOD SAFETY, LABOR REDUCTION

AMBURSEN DAM CO. INC.
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UNIVERSAL FORM PANELS
FOR SALE
15,000 S. F. Standard Sizes, with accessories—good condition
THE ARTHUR A. JOHNSON CORPORATION
347 Madison Ave., N. Y. 17, N. Y.
W. J. Keahon—MUrray Hill 6-1070

BARGAIN
1055-LC P&H DRAGLINE
110' Boom Good Cond.
RYAN EQUIPMENT COMPANY
3350 Morganford Road St. Louis, Missouri

FOR SALE
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BUCYRUS-ERIE, 8 CUBIC FOOT PRACTICALLY NEW. LOCATION: IDAHO J. R.
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TRACK ACCESSORIES NEW and RELAYING

Save on Your INDUSTRIAL TRACK

FOSTER QUALITY RELAYING RAILS
FULLY GUARANTEED

Handle more cars better—cost less to install and maintain. Foster stocks all Rail Sections 12# thru 175#, Switch Material and Track Accessories.
SEND FOR CATALOGS

RAILS • TRACK EQUIPMENT • PIPE • PILING
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PITTSBURGH 30 • NEW YORK 7 • CHICAGO 4
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RAILROAD Cross and Switch **TIES**
Promptly from adequate stocks
NEW and USED *(as available)*
GILLIS & COMPANY
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All sizes and weights. Also frogs, switches, spikes, bolts, tie plates, contractors' and mine equipment carried in stock.
M. K. FRANK
480 Lexington Ave. Park Bldg.
New York, N. Y. Pittsburgh, Pa.
Reno, Nevada Carnegie, Pa.

RAILS - TIE PLATES
Frogs & Switches—Track Accessories
W. H. DYER CO., INC.
2110-X Railway Exchange Bldg., St. Louis 1, Mo.

Heavy Duty Electric
POWER CABLE
Tremendous Inventory
Low, low Prices — CALL COLLECT!
COLEMAN CABLE & WIRE COMPANY
Dept. AC Schiller Pk., Ill. NAtional 5-6215

PIPE
Surplus New & Used
FOR SALE

RAILS
NEW — RELAYING — RAIL ACCESSORIES
MIDWEST STEEL CORP.
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IMMEDIATE DELIVERY

When you need RAIL . . . fast

use this section, as many contractors do, as a rail buying directory. It can save you time when you want to know, quickly, where to buy good new or used rail.

PILING PILE FITTINGS • PIPE CULVERTS • VALVES & FITTINGS
SPECIALISTS IN PRE-FAB. PIPING
ALBERT
PIPE SUPPLY CO., INC.
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PIPE
VALVES and FITTINGS
All Sizes in Stock
NEW—USED
GREENPOINT IRON & PIPE CO. INC.
Bridgett and Stagg Streets Brooklyn, N.Y.

A LARGE AUCTION
CONSTRUCTION EQUIPMENT
FRIDAY, MAY 24, 10 A.M. (EDST) PITTSBURGH, PENNSYLVANIA

LOCATION: The yard of the Monroe Equipment Corp. at 339 Haymaker Road, Monroeville (Pittsburgh), Pa., just ½ mi Northwest of the Pittsburgh interchange of the Pennsylvania Turnpike (junction with US Hiway 22), or 14 miles from downtown Pittsburgh.

NOTE: Equipment owned by Monroe Equipment Corp. which is a joint venture of the M & S Construction Co. Inc., and Rochez Bros., Inc. All equipment is in good condition, ready to go right to work this season.

EACH PIECE POSITIVELY SELLS TO THE HIGHEST BIDDER WITHOUT LIMIT, MINIMUM OR RESERVATION!!!

SHOVELS-DRAGLINES: Lima 1201 Shovel, S/N 3182, (also 80' Boom), good; Lima 802 Dragline, S/N 3144, (also Standard & Stripping Shovel Fronts), very good; Bucyrus-Erie 54-B Shovel, S/N 25702, excellent; Lorain TL-25 Shovel-Hoe-Drag; Lorain TL-20 Hoe-Shovel-Drag; Insley K-12 Hoe; NW 80D & P&H 555 Shovel Fronts; Buckets & Parts for above machines.

TRACTORS-LOADERS: 2 Cat. D-8's, 13A's with 8A dozers & 25 CCU's, NEVER USED; 14 D-8's, 2U 15535 to 2U 9251, all with 8A dozers, 25 CCU's, low hours; 2 AC HD-19's with cable dozers, torque converters; 7 AC H-D-19's with PCU's and Push Blocks, torque converters; AC HD-20G Loader, S/N 3416, overhauled & excellent; 3 AC HD-5G Loaders, S/N 26885 to 13219; D-4 cable Loader.

EUCLIDS: 12 Euclid 49FD 15 Ton End Dumps, S/N 9781 to 5386 GMC 671 power, 8 with quarry beds; 5 Euclid 27FD 15 Ton End Dumps, S/N 4097 to 5286, Cummins power; 4 Euclid 58FDT Bottom Dumps, S/N 9715 to 9732, Model 8V Wagons, GMC power; 3 Euclid 9FDT Bottom Dumps, S/N 3005, 6 & 7, 58W Wagons, Cummins power.

MOTOR SCRAPERS-SCRAPERS: 6 AC TS-300 Motor Scrapers, S/N 669 to 548, low hours; 2 Wooldridge TCR 14-18 yd Scrapers; 5 Wooldridge TCH 23-27 yd Scrapers; 5 Garwood 524 19-24 yd Scrapers; LeTorneau 12-Y Scraper.

GRADERS-ROLLERS-ROOTERS-MISC. EQUIP: 2 Cat 12 Graders, S/N 8T 15274 & 8T 5459, power steering; Galion 10-T 3-Wheel Roller; Buffalo-Springfield & Huber 5-T 3-Wheel Rollers; Euclid 8M DD Tamping Roller; 2 Wooldridge RRS Rooters; LeTourneau K10B Rooter; Parsons 25 Ditcher; Vulcan 400-A Pile Extractor; PMCO 75 W Path Digging Loader; Dumpweyor, Model 454; Others.

COMPRESSORS-DRILLS: Gardner-Denver 165, Jaeger 315 & 105, Schramm 160 Portable Compressors; 2 LeRoi 48 & 2 Ingersoll-Rand EM Wagon Drills; McCarthy 105 Vertical Auger Drill; McCarthy 105 Horizontal Auger Drill; 2 Hardsoog F-11 Horizontal Auger Drills; Quantities of Air Tools.

ALSO: Welders; Pumps; Trucks; Trailers; Shop Equipment; Parts; Tools; Miscellaneous; Many Other Items.

EACH PIECE POSITIVELY SELLS TO THE HIGHEST BIDDER WITHOUT LIMIT, MINIMUM OR RESERVATION!!!

WRITE-WIRE-CALL Auctioneers for complete list. INSPECT any time after May 17th, equipment will be demonstrated. TERMS: Complete Payment Sale Day. Certified Checks, Cashier's Checks.

FORKE BROTHERS
the Auctioneers
321 Sharp Bldg. **Lincoln, Nebraska** Phone 2-1045
— EQUIPMENT AUCTION LEADERSHIP SINCE 1921 —

Monroe Equipment Corporation—Owner
(Joint venture of M&S Construction Co. and Rochez Bros., Inc.)
339 Haymaker Road, Monroeville, Pa.
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THE ANTI-PIRATING CLAUSE the Bureau of Public Roads promulgated for use by state highway departments in their contracts with consultants could certainly stand no legal test. It is unreasonable, unfair and undemocratic. It should be deleted from all future contracts.

Except as an error of judgement it is hard to conceive of the kind of good intentions which could have engendered a restriction on the hiring of "any professional or technical personnel . . . in the employ of the Bureau of Public Roads or the highway organization of any state, county or city . . . without the written consent of the public employer" (ENR Apr. 25, p. 25). Such toying with personal liberties needs more than the promised "clarification." It needs to be disavowed by everyone who has approved its use or used it.

The Bureau of Public Roads is only partly to blame in this matter. For it was the states who wanted such a provision in their contracts for engineering services. And it is the consultants doing federal-aid highway engineering for the states who have been signing such contracts.

The argument that the chief purpose of the provision is to prevent "letterhead" consultants from getting engagements for which they must then staff themselves at the expense of the highway agencies is sheer nonsense. Consultants needn't, and of course shouldn't, be hired on the basis of the lowest bid. Therefore, no smart highway department is going to engage other than a going concern it knows is adequately staffed and thoroughly capable of the task assigned.

Let's call a spade a spade and say the reason the states asked for and use this clause restricting hiring of their forces by private consultants is that they, in general, have not yet arrived at positive means of holding their personnel against the better-paying competition for engineers.

It is easy to see the plight of these public agencies, and easy to sympathize with them. At the mercy of economy-minded legislatures, they must, nevertheless, control turnover and stop their manpower losses if they are to stay in business. And stay in business they must, for public highway agencies are, and must remain, the backbone of this nation's highway engineering.

But the end never justifies the means. Stop turnover, to be sure. That was the point of one whole section in ENR's special report on engineering manpower published last Nov. 6. But the first way to stop it, as suggested in that report, is by paying adequate salaries. And among the nine or ten other suggested improvements in personnel policies, there was no word of restricting the freedom of employees to sell their services elsewhere when it is to their personal and professional advantage.

Personal liberties are at issue here. And so, in a sense, are personal morals that can permit individuals to involve themselves in business arrangements they can defend neither in ethics nor in law. Rather than clarification, deletion of this odious clause is in order. It is time engineering employers stopped meddling with the law of supply and demand; the economic stability, which would be fostered as nature took its course, would see the entire profession better off.

Design Against Fire Spread

ONCE AGAIN, the National Fire Protection Association has provided an invaluable survey and analysis of building fires in the U.S. and Canada. Published in the April issue of the NFPA QUARTERLY, its report on 1956 building fires calls attention to probable causes of the fires and factors contributing to their spread, (see p. 69 of this issue.) The analysis makes it clear that better building design could have reduced losses substantially.

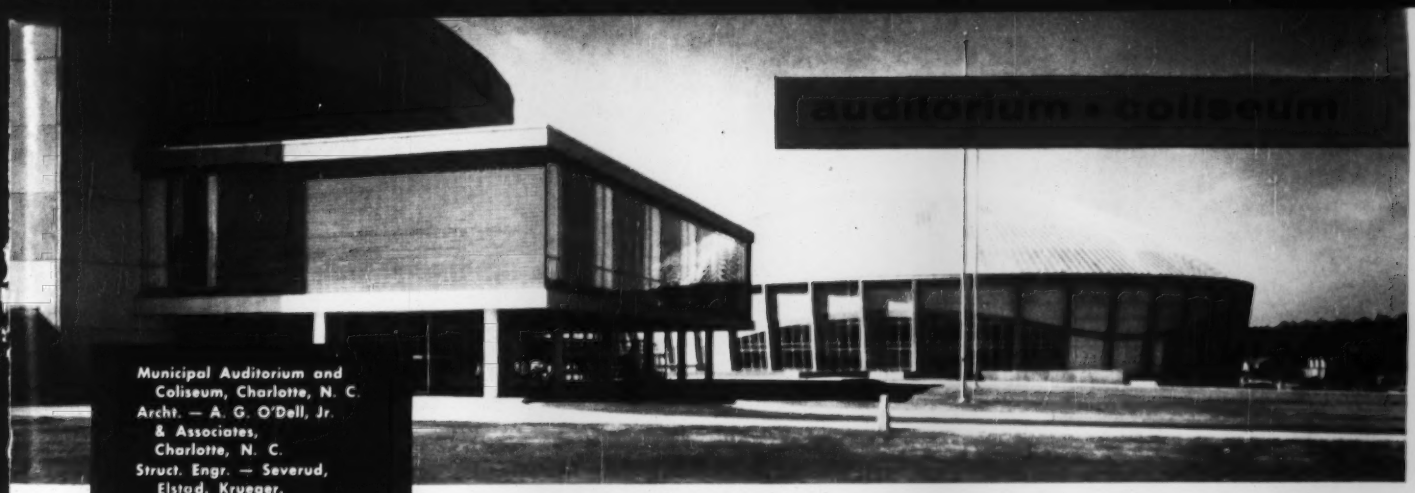
The number of large-loss fires and the amount of damage resulting from them have been increasing every year, despite advances in fire-protection technology. In fact, 1956 set a record for large-loss fires, and about 75% of these occurred in buildings.

Much of the damage that resulted can be attributed to spread of fire due to faulty building design. The report blames open wells and shafts and failure to subdivide floor areas properly, which permitted fires to rage out of control within buildings; also the omission of measures that could have prevented fires from spreading from one structure to another. And it criticized improper applications of combustible materials.

The report credits standard sprinkler systems with a nearly perfect record for limiting fire losses. However, it calls attention to several cases where a sprinkler system was unable to cope with a fire because the installation was inadequate.

These design defects are not new discoveries. They have cropped up in fire reports for many years. Why then, are the same mistakes made year after year when it is just as important for structures to be designed to resist and control fires as it is for them to withstand gravity loads?

Perhaps, better enforcement of building codes or additional legislation is needed. But it would be far better for everybody if architects and engineers would voluntarily raise their design standards to place fire control at the same level as resistance to vertical and lateral loading. Owners should be informed that it is just as wrong to provide substandard fire protection and control to cut initial building costs as to specify beams with a safety factor of 1.01. This is the best way to reverse the shameful trend to bigger and bigger annual fire losses. And it is long past time to start.



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